AMERICAN GAS ASSOCIATION MONTHLY

FEBRUARY · 1936

National Domestic Range Contest
R. J. RUTHERFORD

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Greater Service at Same Cost
R. M. CONNER

•

New Aid for Water Heater Sales
C. G. SEGELER

•

Radiation from Premixing Flames
E. O. MATTOCKS

Report on Back-Pressure Data On Natural Gas Wells

and Their Application to Production Practices

Results of an investigation conducted as a cooperative study by the United States Bureau of Mines and the Natural Gas Department of the American Gas Association.

In January, 1929, the subcommittee on Gauging Gas Well Deliveries, N. C. McGowen, chairman, was assigned the specific problem of devising a practical method to gauge gas well deliveries under any pressure conditions, including open flow, without opening the wells wide to the atmosphere. A method has been devised which is based upon the use of back-pressure data. The report also includes a comprehensive study of the application of back-pressure data to production practices.

The report contains numerous data on representative gas wells in different areas throughout the United States which were obtained by carefully conducted tests. These data, together with all available information, have been analyzed to secure practical methods of gauging gas well deliveries and to determine how back-pressure data can be applied to production practices.

The back-pressure method of gauging gas well deliveries has been adopted by many companies who are finding it practical and beneficial in their operations.

The report is available to the industry in code form at 50 cents per copy; one to 24 copies at 40 cents each; all over 25 copies at 30 cents each.

AMERICAN GAS ASSOCIATION

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AMERICAN GAS ASSOCIATION MONTHLY

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MONTHLY

James M. Beall, Editor

National Range Contest Offers "Key to Better Living"

R. J. Rutherford

By R. J. RUTHERFORD

Chairman, National Gas Range Committee

THE electric industry is fortunate indeed in one sense, in having one or two large manufacturers to do the promotion job for them. It requires very little utility assistance today to put over electric load building. The average electric utility probably does only 10% to 20% of the dollar volume in electric merchandise sales in its own community. The manufacturers having their own outlets, dealers and sub-dealers do a fine job of sales promotion and selling.

It was the lack of such facilities in the gas industry that prompted last year's National Gas Range Committee to attempt to provide an agency within the industry to do a similar job. Obviously, with as many gas range manufacturers as there are, no one manufacturer alone could afford national sponsorship. Why shouldn't this then be a logical undertaking for the industry association? Last year's contest was conceived on this premise and was so successful that this year's committee was authorized to carry on another nationwide industry-sponsored activity.

Such a contest has many advantages. As already mentioned, it offers national unity and guidance, substituting industry self-direction and local company planning for a manufacturer-sponsored activity.

Unity is certainly something, I think we will all admit, we need. Now we are indeed fortunate if two adjoining gas companies happen to tell the same story at the same time or even tell the same story. Much like the reckless driver, that when the road turned the same way he did it was just a coincidence.

Industry Self-Direction

It is truly industry self-direction. The committee is made up of representatives of leading range, equipment and accessory manufacturers and gas utility men and women, representing every section of the country. Certainly such a committee should be able to offer as sound direction to the gas industry as any other method could.

And right here I would like to say a word in commendation of the contributing manufacturers and allied companies whose cooperation makes this activity possible. We can do no less than reciprocate.

The stated objectives are many, most important of which are a unified front in meeting competition, a sincere effort to stimulate gas range business through company and dealer sales and a concerted drive to raise the quality of gas ranges sold to the public. The committee feels it is particularly necessary to urge full dealer cooperation and participation in this contest.

If your company was one of the 300 participating in the 1935 competition, it is unnecessary to point out the reasons why you cannot afford to miss this year's contest. Here are just some of the high lights of 1935:

Manufacturers, gas companies and associated dealers found the 1935 contest very substantially raised the number and quality of ranges sold.

Sales of oven heat controlled ranges registered an increase of 43% over the previous year.

More gratifying—subsequent letters show this increase has been maintained since the contest ended.

Many enthusiastic letters telling of the good effect on company and sales morale.

Here are some excerpts from letters received:

1. "Pleased—especially with large number of sales made by dealers—."
2. "Aside from its general and worthwhile desirable aspects, this campaign has been of specific value to us in our cooperative dealer work."
3. "I think this campaign was a real achievement and the most practical and directly beneficial thing that

has been done for the gas industry through A. G. A. committee work."

These excerpts again keynote the two ideas expressed previously that such campaigns offer valuable unity to industry activity and provide an excellent factor around which to rally dealers. This factor is the art of creating the impression that "everybody's doing it." Buying a new modern automatic gas range is the right thing to do—people all over the country are in on it.

Perhaps you haven't considered it before, but when you enter a retail store the clerk will very often say something like this about an item in which you seem interested, "We're selling a lot of those," creating the thought that it is the popular thing to do. Most buyers are swayed by this suggestion—anything popularly done must be right.

Now as to a brief review as to how the mechanics will operate:

The "key" has been taken as the symbol of this activity. The motto or slogan:

"A Modern Gas Range—The Key to Better Living"

Rallying Point

The first unit of four pieces of printed matter is the prospectus or "Key to Better Living"—For your customers—what could better their living more than the privilege of cooking on a modern automatic gas range. For your company—better living is assured with more satisfied and happy customers. For your dealers—a real chance to participate in something big that will give them more sales and better living. For *you*—it is an opportunity to rally around something definite and *earn* a better living.

You who are sales managers and managers have all received this campaign prospectus. This publication is all about how to get in it and what can be gotten out of it.

There are one or two major differences this year over last. One is in the prizes available for individual salesmen. There are 630 such awards offered and the individual salesman can win, even though his company may not qualify for a company prize. The committee feeling, that by and large, individual salesmen have equal opportunities throughout the country and therefore prize awards based on individual results would be fair, have so set up these incentives. This plan also, gives the salesman, either dealer or utility, a real chance to demonstrate his ability and ingenuity. We all have to admit that such attributes are not confined to any one geographical location.

For example, the other evening the paper contained an account of an enterprizing salesman in North Carolina, aged 9, who was selling his case of measles for 10 cents to other kids so that they could stay out of school too.

Special Feature Awards

Another major change instituted this year is the offering of special awards to those companies and dealers making the best record on both automatic lighted oven ranges and full clock-controlled automatic ranges. For this reason three classes of equipment specifications are given.

The "minimum" specification and that upon which the first four prize series are awarded, includes A. G. A. approval, full enamel finish, oven heat control, insulation and flash top lighting.

The "standard" specification upon which one prize series award is made, includes the "minimum" specification plus automatic oven lighting and

The "Deluxe" specification upon which one prize series award is made includes the "minimum" specification plus full automatic clock-controlled ranges.

Thus is uncovered one of the motives of your committee and that is, that eventually a national contest can be conducted on ranges having at least automatic oven lighting as a minimum. This is the considered hope of your committee, and remember the committee is truly representative and not just one manufacturer trying to sell some pet theory or gadget. We honestly believe such specification standards should become minimum.

It is unnecessary to go into too much detail on the prospectus—please read it carefully and keep in mind your committee is attempting to treat every known condition with fairness. In setting up such a contest we deal with manufactured gas and natural gas companies, straight and combination, companies directly merchandising and those such as some natural gas companies who merchandise ranges entirely through dealers. If there are any questions we will be glad to answer them.

The second unit issued by the committee, which will be in your hands within a week, is called "Keyways" or ways of promoting the "Key to Better Living." This unit is composed of campaign material, consisting of suggestions on setting up a campaign, details of successful campaigns used by some of last year's winners, dealer cooperative activities that have proven successful, many practical suggestions for tying in home service with such an activity and miscellaneous material that may help you.

In this miscellaneous material is included some direct-mail pieces that are available through the courtesy of other companies. A small folder (show copy) for distributing to your own organization and dealers, showing the prize setup and briefly describing the contest.

Also will be given an idea of the other two units. First of these is the "Keynoters," a monthly publication which will give the previous month's individual winners and other pertinent information about how the contest is going.

Keynotes

The second and last unit will be the "Keynotes," to be published every once in a while and containing interesting sales stories, accomplishments out of the ordinary, new ideas that may help others and generally designed to keep interest alive.

All of this, we hope, will be of material assistance in helping you help yourself. Perhaps you looked over the setup last year and didn't see how it could help you or how you could win anything. This year, as mentioned, we have tried to open the prizes up so a wider winning is possible. If you've looked it over and done nothing—look it over again. Nothing is as bad as it seems at first glance.

Remember the case of the old farmer, who getting up one morning looked moodily at the ravages created by a flood. "Hiram" yelled a neighbor, "Your live stock were all washed down

the creek." "How about Flaherty's stock?" asked the farmer. "They're gone too." "And Larson's?" "Yes, they're gone too." "Humph" grunted the farmer, "Tain't as bad as I thought."

Even if we can't all win, think of all the company we'll have while losing.

Seriously, however, we sincerely feel this contest gives you a definite, tangible thing to offer dealers. A chance to get in on some real cash prizes at no expense to them—they come in on your registration. A foundation upon which to build a real cooperative effort.

Let me again just list the benefits you can derive:

1. You are part of a national unified drive.
2. You gain the inspirational and directional benefits of such an activity.
3. You have a sound foundation upon which to build dealer cooperation.
4. You can offer substantial prize participation—meeting similar offers made by competitors.
5. You raise the quality of the ranges going on your lines.
6. More modern automatic gas ranges will meet everything competition has to offer.
7. A modern automatic gas range in the home will influence the attitude of the husband toward gas in the factory or business.

And millions of other benefits too obvious to mention.

So get in the wagon and ride. The National Modern Automatic Gas Range Campaign will help you individually, your company, your dealers, the industry. If you are a straight gas man it will help you meet our friendly enemy who is indebted to his memory for his jests and to his imagination for his facts.

And so, in closing, may we in the gas industry, together with many of the fair sex and the Republican Party, look forward to a perfect '36.

And you've got to act now because entries close February 10.

Pledges for National Advertising Reach 61% of Quota

CONTINUED progress is reported by the Committee on National Advertising, headed by Herman Russell of Rochester, N. Y., in securing pledges for support of the three-year program of national advertising proposed by his committee and approved by the Association's Executive Board.

As of January 23 companies having in active service 6,648,000 meters out of a total of 11,005,400 meters necessary to launch the program had sent in their pledges. This is about 61% of the quota. A number of additional pledges representing substantial commitments are expected momentarily.

In a communication addressed the latter part of January to all unpledged companies, Mr. Russell stated, in part:

"Clarification of certain features of the program has been suggested and we hope may be helpful to you in forwarding your pledge. For example, there has been some misinterpretation as to the scope of the pledge itself. In signing the pledge you express your support of the program for a three-year period, but you commit your company to one year's financial support only at four cents per active meter, permitting you to appraise the first year's results before committing yourself for a second year's expenditure.

"There appears also to have been some misunderstanding of the scope and objective of the proposed program. The report of the Committee on National Advertising, approved by the Association's Executive Board, October 17, 1935, contains the following clear-cut definition: 'that this Committee be empowered to develop such a program with the immediate objective of promoting public acceptance of gas as the modern, efficient fuel for all household, industrial and commercial purposes for which heat is required.'

"Another point which may need explanation is the method to be adopted in formulating a detailed plan of action embracing copy, media, etc. This highly important matter will be delegated to a competent group or committee which it is proposed to select at a later date by vote of the contributing companies. It is such a committee, and not the present one, that will initiate and decide the plan of action to be followed. For obvious reasons it is impossible at this time, while we are sounding out sentiment for the program itself, to put the cart before the horse and submit a premature plan. Every participant in the program will have an opportunity to voice suggestions to this committee, and the measure of confidence imposed in the committee will determine to no small degree the success of the entire project.

"We have been gratified to note the strong sentiment presently existing in the industry for an aggressive advertising effort of national proportions, sufficiently broad in all of its objectives and applications to encompass the requirements of every branch of the industry. Many of the pledges secured to date express the hope that the gas industry will rally enthusiastically to this proposed program."

In a plea for prompt support of the project, Mr. Russell stated:

"It is well to remember that the salvation of the Government's huge hydroelectric projects depends largely on being able to take away from us a load that is in the public interest rightfully ours, so we can well appreciate that we will have still greater emphasis played upon these programs, because of the political significance that they seem to develop in the minds of the uninitiated. This gigantic propaganda, financed with public money including taxes the gas industry has paid, is being promoted by large manufacturing concerns which desire not only to sell electric appliances but also every sort of generating machinery and transmission and distribution equipment. This makes a formidable set of circumstances which might overcome logic and economics.

"Some may feel that the most effective results can be secured by localized effort. True, local activity may well supplement a combined effort but it can not supplant it. If this battle be lost on any front, its next point of attack may be yours. A broad and united battle line is necessary. The foe is too strong to rely on each company waging a successful battle. It is for this reason that our success in correcting this definite objective lies only in a solid, united effort over the entire country, else we may become appraised of an unfortunate situation after it is too late."

Robbins Executive Changes

THE Robbins Publishing Company recently announced the election of M. C. Robbins as chairman of the board, effective January 15. He has been president since the founding of the organization in 1918.

J. H. Moore, who has been with the company since 1919, has been elected president and treasurer. He was formerly vice-president and general manager. Floyd W. Parsons continues as vice-president, secretary and editorial director.

Included in the Robbins Publications are: *Gas Age-Record, Industrial Gas, Gas Appliance Merchandising,* and *Brown's Directory of American Gas Companies.*

Greater Service at the Same Cost

By R. M. CONNER

Director, American Gas Association Testing Laboratories

TRADE associations exert a powerful influence in American business because they often save and make money for their member companies and because they offer their supporters benefits and services which in many instances could not otherwise be obtained at any cost. Such organizations are also industry's means of realizing economic cooperation between individual interests; they are generally not operated for profit, in fact, function in behalf of their members at cost.

In the gas industry, a part of the benefits derived by manufacturers and utility companies from their membership in the American Gas Association, accrue from the activities of its Testing Laboratories such as: their important work in the fields of standardization, testing, inspection, and research. The good that has been accomplished by the Laboratories during the past ten years and the basic value of such an organization and program to our industry is believed to be unquestioned by anyone. Let us here, therefore, focus our attention upon a different matter, i.e., upon the charges made by the Laboratories for the services performed in the testing and inspection of gas appliances and accessories.

A full understanding of the details of the Laboratories' work and the basis upon which charges are computed will, it is believed, convince any fair-minded person that the fees charged for testing and inspection are extremely low and far less than charges made for a similar amount of work by any commercial laboratory. Unfortunately, space will not permit going into detail regarding the basis of fees for inspection and various types of testing work since there are numerous factors entering into the costs for doing such work. It is intended, therefore, to discuss herein the matter briefly and generally but in case any interested party wishes detailed and specific information regarding any bills rendered him for services performed by our organization, the writer will be most happy to go into the matter thoroughly with him verbally or through the medium of inquiries directed to and emanating from the Cleveland Laboratory.

At the present time about 60 per cent of the funds necessary to operate the Testing Laboratories are derived from the fees charged for testing, inspection, certification and listing services. These are minimum fees

Mr. Conner

covering no more than the costs of materials, fuel, labor, and necessary engineering, secretarial and administrative talent. Research and other work is always financed by special appropriation. During the past 10 years the Laboratories have expended more than $250,000 in developing and improving standards for appliances and accessories none of which has been billed directly to manufacturers, but has been derived from the Association's general fund. In addition, some $225,000 has been expended for other investigational purposes making in all a total of about $475,000, none of which has been supplied by the manufacturers of appliances direct. The important point about this whole picture from the manufacturer's point of view is that such funds are assigned their just share of the Laboratories' overhead or general expense charges, thus resulting in considerably lower test fees than under other circumstances would be the case.

So long as the American Gas Association continues to furnish 40 to 50 per cent of the Laboratories' revenue for research in preparation of requirements and for research in industrial and domestic utilization, it would seem probable that the testing fees will not have to be increased.

Fees charged for appliance test and inspection have not been increased since the Laboratories first began operations, even though the amount of time and effort involved in performing each of these specific services has greatly increased. As a matter of fact, the charges to manufacturers have actually been decreased. In October, 1931, the Laboratories Managing Committee acted to grant a flat discount of 10 per cent on every regular bill for test work subsequently tendered. This discount is still being applied. In addition, a further reduction of 5 per cent has been allowed ever since the summer of 1932, provided payment is made within 30 days. In all, it costs a manufacturer but 85 per cent as much to have an appliance tested and certified by the Testing Laboratories today as it did prior to October, 1931. At the same time the number and variety of tests that must be made on each type of appliance have multiplied surprisingly.

The accompanying table demonstrates this fact in part. It will be noted that the number of distinct tests and observations required to be made in checking each model of the four most common types of appliances for approval, which incidentally account for about 88 per cent of the Laboratories' annual test work, has doubled or tripled in the past seven years. In addition, many more varieties of gas appliances are being tested for approval (standards now exist for over 20 varieties), and the testing of some ten types of appliance accessories and controls for listing purposes has been undertaken. Further, the individual tests are becoming more complex and thorough. There is no doubt that the

manufacturer submitting equipment for certification today actually gets a more thorough and intelligent investigation of his product for less money than he did when the Laboratories' program was in its early stages.

The reason, of course, is the use of improved equipment and test procedures and greater efficiency, gained through experience, in operating the Laboratories. Trained engineers, all college graduates, who have specialized for years in their jobs have discovered how to put gas appliances and their accessories through a complete technical "clinic" with maximum speed and efficiency. Test technique and planning have been developed to a high degree. From the staff pay roll to the upkeep of the buildings utmost economy consistent with quality results is the Laboratories' rule.

Similar trends are apparent in certification and inspection activities. Whereas, prior to April, 1932, it was necessary for a manufacturer of gas appliances to pay $10 per basic model, no matter how many, to have his approved products inspected, it is now only necessary that he pay at this rate for the first ten. All inspections of others are made at a rate of but $2.50 per model. Since 5382 models of appliances and accessories manufactured by 226 producers now appear in the official Directory of Approved Gas Appliances and Listed Accessories, i.e., an average of 24 models must be inspected at each plant each year, it is clear that the manufacturers' savings by the new plan are, when considered as a whole, enormous. Furthermore, prior to 1932 it was necessary for manufacturers to have a new approval certificate prepared each year for each and every model at a cost of $5 per certificate. Now certificates may be renewed annually for a fee of $1 each. Although the basic first charge for regular annual factory inspections, and special inspections requested by the manufacturer, has been elevated from $25 to $35 (in order to meet greater traveling costs and to provide for the additional inspection time now necessary because of the more thorough standards used and the more complex construction of modern equipment prevailing), it can be readily seen that other reductions have far outweighed

Laboratory engineer making annual inspection of approved range model on Manufacturer's assembly line

EXTENSIONS IN SCOPE OF APPROVAL REQUIREMENTS SINCE 1928

Type of Appliance	*Total Number of Requirements To Be Met by Each Appliance*		*Per Cent Increase 1928–1935*
	1928	*1935*	
Gas Ranges	271	529	95
Gas Water Heaters	114	200	83
Gas Space Heaters	104	342	229
Central Heating Gas Appliances	107	284	163

General view of gas range testing section of Cleveland Laboratories

this item. Still further, in recent years many hundreds of inspections over and above the annual number formerly required have been made at manufacturers' plants each year on the Laboratories' own initiative for which no charges are made, thereby rendering additional service to producers of appliances and accessories and further protecting the ultimate purchaser.

To further exemplify the extremes to which the Testing Laboratories go in order to save the manufacturers' money—for that is an important purpose of all trade association work—consider the establishment of the Pacific Coast Branch of the Testing Laboratories in Los Angeles in 1931. One of the prime reasons for founding this branch was to save for manufacturers the time and expense required in shipping West Coast-produced equipment to and from Cleveland for test. An auxiliary reason was to supply a local base from which inspecting engineers could operate without excessive traveling expenditures. In its larger aspects, the Los Angeles branch was instituted to carry the experience, service and talent of the Association's carefully developed appliance testing and approval program to the very doorstep of the western sections of the United States.

The Laboratories' Managing Committee and the Executive Board of the American Gas Association are both on the alert for ways and means of making the Testing Laboratories of the greatest benefit to our industry at a minimum of expense and inconvenience; that is the trade association's business. Every member company of the American Gas Association may rest assured in knowledge of the fact that if the Laboratories can effect a saving for it at any time that it will do so. But none of the benefits of the program must be lost thereby; in no particular shall the Laboratories' vital responsibility to either the American gas industry or the gas consumer be violated. Economy is essential, but progress is the life of all business.

Theodore V. Purcell Retires on Fiftieth Anniversary

Theodore V. Purcell

THEODORE V. PURCELL, vice-president in charge of sales of The Peoples Gas Light and Coke Company, resigned his post on January 15 after rounding out a half century in the gas utility industry, 35 years of which have been spent with the Chicago gas company.

F. X. Mettenet, general sales manager of the Public Service Company of Indiana and the Northern Indiana Power Company, has been elected vice-president to succeed Mr. Purcell, it was announced by George A. Ranney, chairman of the company.

Retirement of Mr. Purcell means a loss to the gas industry of one of its leading figures. The Charles A. Monroe Award of the American Gas Association which was conferred upon him in 1931, gave tangible form to the recognition which he had enjoyed throughout the industry for his progressive and sound studies in rate making. He was one of the pioneers in the application of promotional rates, his work in this field having begun many years ago when the industry was being revolutionized by the change from coal gas benches to carbureted water gas generators, the decreased production cost opening the way to sales expansion.

An active participant in the work of the American Gas Association since its organization, Mr. Purcell was chairman of the Rate Structure Committee for two years, in 1929, and a member of the Rate Fundamentals Committee as well.

Educated in engineering, Mr. Purcell first went to work for the Equitable Gas Company of New York, which was later consolidated with the New Amsterdam Company. After holding executive positions with both companies, he went to Chicago in 1901, and has been with the Peoples company since then. He was made secretary of the company in 1917, and vice-president in charge of sales in 1924.

He is credited with having started the first home service department in the gas industry, and the steady growth in importance of this phase of the industry's service to customers owes much to his continued interest. Other innovations which Mr. Purcell promoted at the Peoples company include the service annuity system, a new system of general accounting, and scientific employment and service systems. He was one of the promoters and a charter member of the Peoples Gas Club, one of the largest employee organizations in the gas industry.

"The directors and officers of the company desire to express their great appreciation of Mr. Purcell's loyal and efficient service," said President George F. Mitchell in announcing Mr. Purcell's retirement, "and to wish for him a long life of well-earned rest from the arduous duties of his office."

Mr. Mettenet comes to the Peoples company after 23 years of experience in the utility field. Graduated from Cornell in 1912, he went to work for the Commonwealth Edison Company of Chicago, and after three years in the construction department was transferred to the sales department, in which field he has been engaged ever since.

Mr. Mettenet became general sales manager of the Northern Indiana Public Service Company in 1923, and in 1929 he was made sales manager of the Public Service Company of Indiana and the Northern Indiana Power Company, the post he resigned to assume his new duties. His record was praised highly by John N. Shannahan, president of the companies, in announcing Mr. Mettenet's resignation.

Henry B. Rust, Koppers Chairman, Dies

HENRY B. RUST, chairman of the board of the Koppers Company, Pittsburgh, Pa., died January 17. He was 63 years old.

In addition to heading the vast Koppers Company, Mr. Rust was a director of the Westinghouse Electric and Manufacturing Company, and chairman of the trustees of the Eastern Gas and Fuel Associates, Boston. He was a member of the American Gas Association, the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, and the Engineers Society of Western Pennsylvania.

A son of Armistead Thomas Mason Rust and Ida Lee Rust, he was educated in the public schools and by private study. He moved to Pittsburgh when he was eighteen years old, becoming affiliated with the city's Public Works Department. One of his early works was construction of Pittsburgh's largest park, Schenley Park.

He worked for the Department of Public Works in 1890-'91, and was superintendent of construction for the Colorado Fuel and Iron Company from 1901 until 1903, when he returned to Pittsburgh as vice-president and general manager of the Rust Boiler Company.

After five years with this firm he became associated with the Babcock & Wilcox Company, and in 1919 was elected president of the Koppers Company. Under Mr. Rust's leadership, the company became a vast organization. It has a foremost position in the by-product coke industry as well as other enterprises. Mr. Rust was president until 1933, when he became chairman of the board.

The National Automatic Gas Water Heater Sales Campaign

Editor's Note: Registration date extended to February 15. All gas companies invited to participate

R. J. Canniff

By R. J. CANNIFF

Chairman, Gas Water Heater Division, A.G.A.E.M.

THE National Gas Water Heater Sales Campaign has as its objective the sale of at least 300,000 automatic gas water heaters in 1936. To accomplish this result, a group of manufacturers of American Gas Association laboratory-approved automatic gas water heaters have provided a promotional fund of $100,000 to be expended for national sales contests in two divisions—1. To utilities and their plumber-dealers. 2. To plumber-dealers direct. A total of $50,000 is to be provided in prize money over a schedule of prizes that provide 1185 cash prizes to Division 1 of this contest and 75 prizes to Division 2.

Classification of Companies

The contest plan and program were developed by a joint committee consisting of the Water Heating Committee of the Commercial Section of the American Gas Association under the chairmanship of R. A. Koehler and each of the sponsor manufacturers. In setting up this contest the committee recognized that in order to provide equal opportunities for all gas companies, various conditions must be taken into consideration; namely—gas rates, number of meters in various areas and market opportunities. Therefore, the classification of companies registering was broken down into three groups classified by domestic gas rates which groups are further divided into five divisions based on the number of meters. This classification of companies establishes a fair basis of competition as all groups have comparable rates and equal sales opportunities.

Furthermore, to make the prizes actual rewards for good sales performance, the final decisions on winners will be based on the number of points earned per thousand domestic meters in 1-, 2- and 3-family houses rather than on mere volume of sales. The awards will be based on a point system of one point for each automatic storage or instantaneous gas water heater installed and a half-point for each conversion automatic gas water heater.

Prize Distribution

Companies registering in this contest may select two months for intensive sales drives. These months need not be consecutive. This automatically registers the company in the eight months' grand contest.

The distribution of prize money provides for the best sales records made by contesting companies for the two months' contest, best sales records for the eight months' contest and also provides individual cash prizes for best sales performances by individual salesmen as follows: Monthly cash prizes of $10 each to the eight salesmen in each division having the highest number of sales points and three grand prizes in each division of each of the groups for the salesman making the best sales record of the eight months' period.

Silver medals of accomplishment are awarded to each salesman winning a monthly prize three times during the eight months' contest and the winners of the highest points for the eight months' contest will be awarded gold honor medals.

Special company awards of a silver honor plaque will be made to the three companies in each division attaining the highest number of points per thousand of 1-, 2- and 3-family customers in each group during the eight months' contest period.

R. A. Koehler

The plumber contest provides 75 cash prizes totaling $10,000. The classification of plumber-dealer contestants is made on the same basis as the gas company classification; that is, after registrations are received, the plumbers will be classified by gas rate and by number of meters in their community. The prizes will be awarded on the point system and there will be 25 cash prizes in each division in each group.

Sales Promotion Helps

A complete program of sales promotion helps will be provided to support the activities of various companies and plumber dealers registering in this contest. This portfolio will contain newspaper and out-door advertising suggestions, window and floor display suggestions, consumer folders, a hot water picture newspaper in rotogravure, a complete plan program of suggestions for organizing and conducting local sales efforts, dealer cooperation, employee selling, sales contests, prospect building, home service department program, etc.

A monthly contest newspaper will be published during this campaign. This newspaper will carry information on the contest, the standings of various contestants, pep talks, inspirational material, sales helps of various kinds, etc.

The field organization consists of a general chairman of the American Gas Association Water Heating Committee with twelve geographical divi-

(Continued on page 79)

The Grand Rapids Home—All Gas and Ultra Modern

G. R. Chamberlain

WITH the opening of the "All Gas Wonder House" in Grand Rapids, Michigan, January 5, thousands of people were enabled to see the latest gas appliances in the most modern example of home construction, the first prefabricated steel panel dwelling to be built in Michigan. The project was conceived, financed and completed in all details by the Grand Rapids Gas Light Company, with the exception of floor coverings, draperies and furniture.

Fundamentally correct, with a new-day appeal, this All Gas Wonder House vibrates with the smartest of crisp, sophisticated background colorings and furnishings, yet maintains a homelike restraint unlike the former exotic and aggressive angularities so typical of modern design. With its advanced design, not objectionably ultra-modern, the house serves as a background against which is dramatized the perfect fusion of the modern building idea with the modern gas appliance and the modern use of gas in its various applications to domestic use.

Gas Equipment Featured

The house is termite-proof, insulated against heat, cold and sound, permits a maximum amount of sunshine through new window arrangements, is easily kept clean and through its various features saves the housewife many unnecessary steps. Gas features include the range, refrigerator, rubbish burner, water heater, house heating and air conditioning system, laundry stove, clothes dryer, and three fireplaces, one of the latter being in the recreation room, another in the living room, and the third in a bedroom.

The kitchen is one of the most outstanding rooms in the house and probably will draw the most attention from the housewife who will be pleased by the efficient arrangement of the room and its various modern conveniences.

"The All Gas Wonder House visualizes the home of the future," declared Glenn R. Chamberlain, president of the Grand Rapids Gas Light Company, under whose guidance the house was planned and built.

"Erection of this modern house with its innumerable advantages over the common type of house is another step taken by our company to keep the latest developments of home living before the public. It was for a similar reason that a few years ago we established our home service department.

"Some visitors undoubtedly will feel the house is unusual. In fact, it is. It is unusual for one reason, because every feature in it is practical. There are no hidden corners; there is no waste space. Yet it is roomy.

"A major feature of this modern house is the low cost of maintenance."

The location of the house in a suburb having large building lots and spacious streets made some special outdoor illumination desirable. Therefore, two 3000 candle power gas floodlights have been installed to operate during public inspection of the house. These

Interior views of "All Gas Wonder House"

lamps are in operation daily from darkness until 9:00 P.M.

The basis for the kitchen plan, designed by Mabel Claire Atwood, home service director of the Grand Rapids Gas Light Company, was "a place for everything and everything in its place," and the importance of creating a unified appearance was emphasized throughout in its arrangement and finish.

Compact arrangement in a U-shaped design with the major equipment lining the three walls, the basement and rear entries removed from the working centers of the kitchen, protection to the dining room from cooking odors, and a view of service by proper placing of the dining room door, elimination of pantry and up and down steps, are features of the plan.

The range, refrigerator and sink centers each have been provided with ample counter space for working surface. The height of the counter is 36 inches from the floor, the gas range and sink also conforming to this level.

One of the popular features and one of the most important is the gas garbage burner. All rubbish, such as papers, boxes and bags, is dumped in the burner and destroyed without creating odor and smoke.

The house heating and air conditioning system has aroused considerable interest because of its high efficiency, compactness and low operating costs. It is known as an indirect heating system. Steam is generated in the gas-fired boiler unit and the air is heated, humidified, filtered and circulated by a separate unit. An advantage of this method is the fact that rooms from which it is undesirable to recirculate the air, such as kitchen, garage and bathroom, may be heated with steam radiators and delivery ducts so as to maintain the correct balance under all weather conditions.

The air conditioner fan has a capacity sufficient to give from six to eight complete air changes per hour. All air passes through the viscous treated filters where all dust and foreign substances are removed, then over the heating coils, and last, through the humidifier where moisture is automatically added, according to the setting of the humidistat.

The system is controlled by night and day thermal-control which maintains a constant temperature under all conditions.

Philadelphia Gas Works Marks One Hundredth Anniversary

FEBRUARY 10, 1936, marks just one hundred years since gas was first distributed through the streets of Philadelphia from a central plant. In a special centenary number of *The Philadelphia Gas Works News*, this one hundredth birthday is commemorated in a review of the history of the utility during a period of astounding changes in our national life.

Illustrated with attractive wood cuts of old and historic scenes, the story of the progress and development of gas in Philadelphia is told with unusual vigor in *The News*. Almost from the very beginning the Philadelphia Gas Works has been owned by the city, but the advances which have placed it in the forefront of the gas utility systems of the country have been made under the management and operation of a privately owned corporation, The United Gas Improvement Company, which has leased the plant from the city since 1897.

On February 8, 1836, the manufacture of gas was actually begun and two days later forty-six gas lamps were lighted on Second Street. There were only two premises with a total of nineteen private lights equipped to use gas on the first day of its availability. From this small beginning, the gas works progressed through the gas lighting era and into the present heat utilization period in which 800,000 appliances are served for various purposes.

An interesting sidelight on cooking by gas in 1854 has been reproduced in *The News*. An editorial in a periodical of that year describes it as follows: "Cooking freed from the disagreeable accompaniments of smoke, and dust, and grease, is somewhat of a novelty in the history of the cuisine. There is so wide a distance between the drawing room and the kitchen, that we are generally willing to ignore the latter altogether, or at least, acknowledge its existence only in the results. But here the whole legion of pots and pans, and cooks and scullions, is incontinently banished; and in their place, we have a neat and serviceable apparatus, which discharges as well, if not better, all the duties of the above agents, while greatly avoiding their annoyances. For instance, nothing is seen but an astral lamp, with eighty jets of its circular burner, upon a center table; over it a tin cone, and within that a substantial piece of beef, weighing perhaps ten pounds. The roasting is completed in less than two hours, and with consumption of the most trifling quantity of gas. A dripping-pan catches the juices of the meat, and the whole is thoroughly done. There are tin boilers for boiling, and conveniences for baking, etc. The flavor of the viands is more perfect than when cooked in the ordinary way, and the expense of the process amounts to mere nothing."

The special centenary issue concludes with a brief statement of the policies of the company by John E. Zimmerman, president of The United Gas Improvement Company.

New A. G. A. Director

F. A. Newton

AT the January meeting of the Executive Board of the American Gas Association F. A. Newton of The Commonwealth & Southern Corp., was elected a director to fill the vacancy for the unexpired term ending November, 1936, due to the election of N. C. McGowen as second vice-president.

Born in Sparta, Wis., Mr. Newton was educated at the University of Wisconsin Engineering College, which he entered in 1902. After three years in the U. S. Reclamation Service in Colorado, he became affiliated with the Railroad Commission of Wisconsin in Madison, where he stayed for four years.

In 1914 Mr. Newton joined Hodenpyl-Hardy & Co., continuing with its successors, The Allied Power and Light Corp., and The Commonwealth and Southern Corp. Mr. Newton moved to New York from Jackson, Michigan, in 1930.

Mr. Newton enjoys an international reputation, particularly in the field of public utility rates and valuation. He is in charge of rates and valuation matters for The Commonwealth and Southern Corp., and its subsidiary companies.

For two years Mr. Newton was chairman of the Rate Structure Committee of the American Gas Association and is still a most active member of this committee. He has served as president of the Michigan Gas Association and is now chairman of the Rate Research Committee of the Edison Electric Institute.

New Aid for Increasing Water Heater Sales

By C. G. SEGELER

Utilization Engineer, American Gas Association

Eight months' experience of seventy-five gas companies with the data provided by the M. I. T. tests on twenty-eight water heating methods has developed many new uses for the material. A discussion of these methods, to which are attributed many direct sales, is of timely importance in connection with the national water heating sales campaign now in progress.

THE committee which was responsible for the conduct of the comparative water heater tests run by Professor Wilkes at Massachusetts Institute of Technology sat in solemn conclave and pondered on the uses to which these results could be put. They realized, as everyone in the gas industry does by now, that the tests proved gas water heating to be the least costly among the various competitive methods. Gas was less expensive than oil, than electricity and than coal.

The question was how to put the story across. They decided that the results could be made available in the form of loose leaf sheets, one for gas, one for coal, one for oil and one for electricity, a copy of which could be left with a prospect for gas water heating. They argued that it was advisable to separate the results on individual sheets, because it would be confusing to give a prospective customer so much data, and it would be better to give him only the sheet covering the type of water heating service that he now employs and a sheet covering the cost of gas.

So thought the committee.

Eight months' experience has shown how mistaken the committee was. Seventy-five gas companies purchased sets of these sheets. The way in which they used them was an eye-opener. Not just one method, as envisaged by the committee, but thirteen others which were not contemplated have come into use and found to be effective as aids to water heater sales.

That gave the committee something to think about because it was clear that unless a story about these other uses to which the sheets could be put was carried to the gas industry, the committee would not have fulfilled its complete function.

This report, therefore, after eight months of use of the results of the tests at Massachusetts Institute of Technology is given to the industry to show how much greater values can be obtained from the tests run by Professor Wilkes on some twenty-eight water heating methods.

A letter was sent to most of the companies which had started to use the test sheets, requesting them to report on the methods they had used to apply the material and the success they had with it. The replies brought forth the uniform approval on the part of these companies in no uncertain terms. Not only did they attribute direct sales results to the use of the sheets, but in addition to that, intangible results along various lines were acknowledged. Because of the unanimity of approval and the many valuable suggestions which were contained in the letters which were received, the committee is glad to publish a summary.

The purpose of this summary is not only to acquaint the gas industry with the methods of successfully using the results of Professor Wilkes' tests, but to urge those companies which have not yet purchased sheets for the use of their salesmen, plumber dealers and others to do so as soon as possible. The cost of the sheets is negligible in comparison with the value which they have in water heater sales promotion.

The standard way to use the sheets is to supply all the salesmen with an ample supply of sheets covering competitive forms of water heating in the territory and also gas water heating. The salesman does not give sheets to every customer, but only when the customer feels that a competitive fuel method is a cheaper way of heating water. Then the salesman brings forward the argument that this is not correct, as has been proved conclusively by the work done by Professor Wilkes at a leading technical school, and that a report—not prepared by the gas company but the report of Professor Wilkes—is available in an understandable form which he can leave with the customer or send with the letter of proposal, as the case may be. In some cases companies have distributed the gas sheet more widely, giving every prospect a copy. In most of the instances the reports have indicated that the sheets applying to the electric water heater and to the coal furnace coil water heating costs have been particularly useful.

Public opinion has generally been that the furnace coil adds little, if anything, to the total fuel bill. Consequently gas salesmen encountered difficulty in changing such an opinion, and gas water heating often had to be sold on the basis of a total increase in the gas bill rather than deducting the existing coal cost for water heating. The tests at Massachusetts Institute of Technology substantiate the statement of the salesman and he can make the deduction so that the convenience and improved service of gas water heating costs little, if any, more than the existing method. With the operating cost objection out of the way, it is of course much easier to close the sale.

Besides presenting these sheets to

customers, companies have found it advisable to distribute the sheets throughout their organization, to service and adjustment clerks and salesmen handling other appliances than water heaters and to the Home Service Department employees. In addition to just handing them out, the various supervisors have discussed them in employee talks. Other companies have gone beyond this and carried this same idea out in dealings with the dealers, plumbers and architects, leaving copies of the sheets and discussing the technical details with the various sales allies.

One interesting case deals with a territory in which there was a fairly large percentage of electric water heating, which the electric company claimed to do for $1.50 to $2.00 per month. Here the gas company sent out only the test sheet covering electric water heating, to show to the present users of electric water heating the real cost of the service. This was done in advance of any campaign to sell these customers gas water heating.

Salesmen Enthusiastic

Quotations from the interviews with salesmen who have used the sheets in connection with electric competition make interesting reading:

"In some cases have been wonderful. Absolutely sure of making prospective buyer of electrical equipment stop to consider the difference in operating cost."

"Have helped me in making several sales. Most customers glad to get the information. Have been the means of actually stopping the sale of electric water heaters and causing the removal of others."

"By actual experience, I can say that these have been of immense value to me. In four specific cases, it was exactly what was needed to break down sales resistance in favor of gas."

In connection with the use of the sheets in the education of architects and builders, one company found that they were of great value when sent to all builders of new homes, who would naturally be prospects for some form of water heating. A set of sheets was taken to the builder and the advantages of gas water heating service were actively presented, while the sheets served to establish the unbiased data on costs. In this way it was possible to demonstrate that the cost of gas water heating was less than the cost of competitive water heating methods which are really inferior to gas. Several sales a month are directly traceable by this company to the use of the sheets with builders.

Along an entirely different line of thought, one company is using the sheets to demonstrate to some existing gas water heating customers that it would be advantageous for them to buy a more efficient new gas water heater. The same argument applies to customers contemplating the use of water heaters of inferior makes.

Handling High Bill Complaints

Along the same line of reasoning, another company has found that the test sheets are of especial value in handling high bill complaints on the operating cost of old storage water heaters. This company's plan is to show the complaining customer what can be done with a modern, efficient gas water heater, and to explode any theories he may have on the cost of heating water with competitive equipment. The talk is followed by action, and this company rents efficient, modern gas water heaters to customers having old and worn out heaters, and thereby has converted a good many high bill complaints to satisfied customers.

This same company reports that a rather intangible benefit received from the sheets was a decided improvement in the attitude of fitters and service men toward the use of gas for water heating. Apparently some of the company's own employees were being influenced by high bill complaints. The introduction and discussion of the test sheets has put new conviction into the many contact employees.

President Denning recently received a letter from a member which greatly pleased him. The following paragraph is taken from that letter:

> May I commend your interest in the benefits of the Association to the members. We greatly appreciate the wealth of material which has been passed to me as a delegate. This has been of much benefit to us and I regularly route the various publications and pamphlets to our men most concerned with each individual activity.

While all of the gas companies who have used the sheets have agreed to their effectiveness, one company went beyond this. They felt that to prevent any dilution of the unbiased character of the material, no imprint of company name should appear on the sheets. This, in their opinion, would prevent the reader from drawing the erroneous conclusion that the local gas company had a hand in preparing the material.

Perhaps the most significant of all of the results of the tests at Massachusetts Institute of Technology has been on the manufacturers of water heaters themselves. At first American Gas Association Headquarters was flooded with protests that this or that heater had not been used in the test, or had been unfairly placed in the complete comparative alignment in the technical report. It required a great deal of explanation to show that the purpose of this work was not in any sense to compare individual makes of gas water heaters with one another for the purpose of disparaging or contrasting existing makes, but that emphasis was laid on the comparison between gas and the other fuels. The only reason for comparing the gas water heaters among themselves at all was to show how the most effective competitive position could be reached. The result of all this is gratifying in the extreme, because the manufacturers have recognized the need and possibility for making available to the trade water heaters which not only could equal the best performance of the heaters reported by Professor Wilkes, but were able to surpass this performance. We therefore can look confidently into the future, knowing that the equipment which we can deliver to our customers will not only be good, but much better than before.

Yet all of this excellent progress will be of no avail unless it is put to practical use. The manufacturers are doing their share in making better water heaters available for the gas industry's merchandising efforts. The effective campaign to sell these new water heaters needs the support of accurate and adequate publicity. The 1936 National Water Heater Sales Contest is one of the effective ways of carrying out the program, and the results of the tests at M. I. T should be another effective sales aid.

Radiation from Premixing Burner Flames in Combustion Chambers

By E. O. MATTOCKS

Industrial Gas Engineer
American Gas Association Testing Laboratories

E. O. Mattocks

THE ability to obtain the maximum efficiency in industrial heating processes is one of the most essential problems that confront engineers. In order that these problems may be appreciated, a thorough knowledge should be possessed of what transpires when a fuel is burned. To supply this information for the combustion of natural and manufactured gases, the Committee on Industrial Gas Research of the American Gas Association inaugurated a series of research investigations* at the Association's Testing Laboratory in Cleveland some six years ago. As a result of this work some very worth-while data were obtained, although the task is by no means completed.

Heat Transfer Trends

During these investigations the behavior of gas flames was observed and trends as to the manner of heat transmission from them established. Although the data pertinent to heat transfer have been thus far of secondary consideration, an attempt will be made in this paper to analyze certain related information and indicate the effect of types of flame on heat emissivity. These investigations have been productive of results which are somewhat paradoxical and which do not agree in every respect with statements made by other investigators.

A large number of different types of flames are utilized in industry. These may be resolved into three general classes, namely, the luminous or yellow flame, where none of the air for combustion is mixed with the gas before ignition; the Bunsen flame, where part of the air for combustion is premixed with the gas before combustion; and the non-luminous flame, where all the air required for complete combustion is premixed with the gas prior to ignition.

Presented at annual meeting, American Society of Mechanical Engineers, December, 1935.

* List of Industrial Gas Research Bulletins. (See Appendix attached.)

Yellow Flame Characteristics

Although the luminous or yellow flame is more or less common in some types of domestic gas appliances, its extensive use in industrial heating processes is relatively recent. This flame produces a high percentage of radiant heat as compared to other types of gas flames. Flame "A" in Figure 1, represents a schematic drawing of one kind of luminous flame. The initial combustion reactions occur on surface 2, while the luminous zone 3 represents the space where these reactions are continued as additional air enters this zone. During this process some of the unburned hydrocarbons are broken down, liberating free carbon. The high luminosity of the flame is the result of heating the carbon to incandescence.

The Bunsen flame depicted in Figure 1, as flame "B," is doubtlessly the most commonly known type and has probably received the most attention from investigators. Therefore, little will be said here concerning this particular type of flame. It is important to remember that air which is premixed with the gas permits partial combustion to occur on surface 6. Combustion is completed in zone 7, as air enters this region.

The so-called non-luminous flame, where all the air required for complete combustion is premixed with the gas before combustion is effected, is shown in Figure 1, as flame "C." This type has a wide application in the industrial field. This flame is frequently confused with the Bunsen flame largely because of the similarity of appearance, although combustion proceeds in an entirely different manner. When the air required for complete combustion is totally premixed with the gas, all of the reaction takes place on surface 9, of the primary cone. While there is a visual secondary cone or mantle around the primary cone, this outer zone 10 is composed of luminous gases and is not a combustion zone as is normally conceived. If carbon dioxide (CO_2) and water vapor (H_2O) are dissociated in zone 9, the reversal of this action may partially occur in the luminous mantle 10. But this action is so small generally as to be negligible and the luminosity resulting from it can be disregarded.

Non-luminous flames are credited with little radiating power except for the long rays of CO_2 and H_2O which lie almost entirely outside the visible spectrum. Although experimental results indicate a greater amount of radiant energy than can be accounted for by this theory, apparently this type of flame is a source of radiant energy other than that due to the CO_2 and H_2O gases. Before the actual test results can be presented, it will be necessary to state briefly the purpose and the method of the investigations conducted at the American Gas Association's Testing Laboratories.

Furnace Design

To design a furnace so as to have the minimum heat loss through walls, it is essential to know how much gas can be completely burned in a given combustion space. Since knowledge of this subject was limited and contradictory, tests were conducted to determine authentically the combustion space requirements of gas flames. Before such tests could be undertaken, however, it was necessary to define complete combustion. For the purposes of these studies, the point where exactly 0.05 per cent of unburned products, usually carbon monoxide and hydrogen, existed, was considered as the point where combustion was complete. Acceptance of this definition required that several things

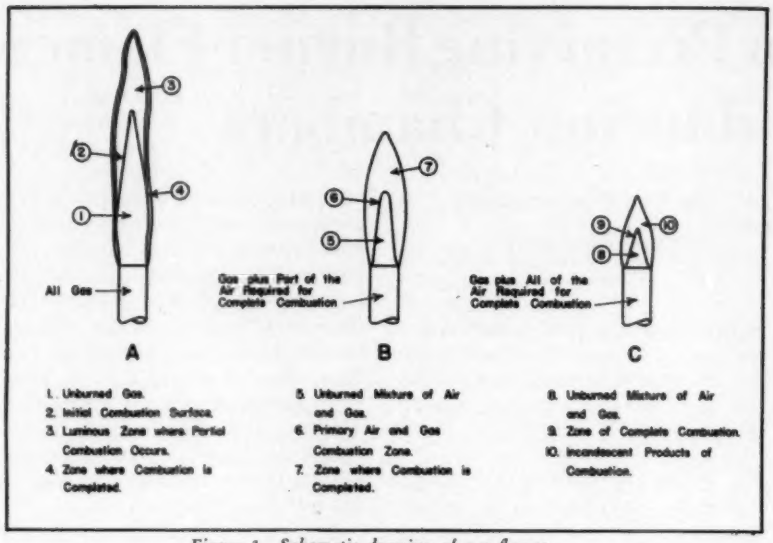
All Gas
Gas plus Part of the Air Required for Complete Combustion
Gas plus All of the Air Required for Complete Combustion
A
B
C
1. Unburned Gas.
2. Initial Combustion Surface.
3. Luminous Zone where Partial Combustion Occurs.
4. Zone where Combustion is Completed.
5. Unburned Mixture of Air and Gas.
6. Primary Air and Gas Combustion Zone.
7. Zone where Combustion is Completed.
8. Unburned Mixture of Air and Gas.
9. Zone of Complete Combustion.
10. Incandescent Products of Combustion.

Figure 1—Schematic drawing of gas flames

be determined accurately. First, a true and representative sample of the flue products had to be obtained regardless of their temperature. A quartz water-cooled sampling tube was designed and constructed for this purpose. Second, the analysis of these flue gases had to be accurate enough to reveal the point where combustion was completed. A modified Orsat type of gas analysis apparatus which could be read to the 0.1 per cent and an Iodine Pentoxide machine with an accuracy of 0.002 per cent were used. The ratio of carbon monoxide to hydrogen was determined and subsequent analyses of the products of combustion were made by ascertaining the CO content. The predetermined ratio was applied to obtain the amount of CO plus H_2 present. Tests were conducted under each set of furnace conditions where the CO plus H_2 was first greater, then smaller than 0.05 per cent and a curve drawn from the data. In this manner the exact point where 0.05 per cent CO and H_2 existed could be determined.

The third factor that required a great deal of consideration was the attainment of the flue gas temperatures here, as in other items where accuracy was essential. For temperatures less than 2200° F., the high velocity thermocouple was used. At higher temperatures, however, this could not be employed since platinum-platinum-rhodium thermocouples were required. The cost of such equipment is excessive. Regardless of what elements were used, temperatures in excess of about 2800° F. could not be measured. To secure these high gas temperatures, the spectra-line reversal method was finally adopted. In this method, a small amount of finely ground table salt (NaCl) was introduced into the air-gas stream before combustion. When viewed through a spectrascope, a sodium line was seen superimposed on a band spectrum emanating from a calibrated electric lamp. By varying the electric input to the lamp, thus changing its brightness temperature, a reversal of the sodium line spectrum was obtained. The flue gas temperature was determined from the known temperature of the lamp filament.

Test Combustion Space Only

Since the prime purpose of this investigation was to determine the quantity of gas that could be completely burned in a unit of combustion space, the test furnaces were, therefore, only combustion spaces and in no way represented a complete industrial furnace. In other words, only a unit combustion space of an industrial furnace was tested. What disposition would actually be made of the hot flue gas from this point at the outlet of the test furnaces, would naturally be a function of furnace design. It must be borne in mind throughout this discussion that the results apply only to the combustion chamber of a furnace.

The combustion chambers were made of refractory material. A burner was installed in one end integral with the combustion chamber so that no air could leak in or out of the furnace. The air-gas mixture was allowed to flow through a mixing and surge chamber before it entered the burner, in this manner insuring a uniform flow of well mixed air and gas. Wet test meters were used to measure accurately the gas input, the heating value of the gas having been previously determined. Air at one-pound pressure was supplied to the mixer, thus assuring an adequate range of turn-down. Various types of burners were tested in each combustion chamber and various sizes of combustion chambers were employed.

Furnace History Secured

After equilibrium conditions had been attained for a given input condition, the input gas rate, flue gas analysis and flue gas temperature were obtained. The air adjustment was then slightly altered and this procedure repeated until curves could be drawn and the exact conditions determined where combustion was complete. That is, where the flue gas analysis showed 0.05 per cent carbon monoxide plus hydrogen. The input to the combustion chamber was changed and this operation repeated until a complete history of the furnace was secured.

As a result, a very definite relationship was established between the flue gas temperature and the amount of excess oxygen required to obtain complete combustion. In other words, a change of a hundredth of one per cent in carbon monoxide plus hydrogen resulted from a one per cent change in excess oxygen. It was found that to obtain complete combustion it is necessary to supply oxygen in excess of that required for combustion in amounts in proportion to the magnitude of the flue gas temperature.

To determine the effect of the size of the burner port on the combustion characteristics of the gas, several size ports were tested in the same combustion chamber. During such tests conditions were retained constant except the size of the burner port with the resulting change in the velocity of the issuing air-gas mixture.

For the same input, the flue gas temperature, when using the small

port, was lower than when using the larger port. For example, with Furnace "R" burning gas at the rate of 2,000,000 B.t.u. per hour per cubic foot of combustion space, a large port $^{11}/_{16}$ of an inch in diameter produced a flue temperature of 3015° F. while a $^{3}/_{8}$ inch diameter port produced a flue gas temperature of 2960. Correspondingly, the excess oxygen in the flue gases necessary to obtain complete combustion for the large and small ports, was 3.00 and 2.67 per cent respectively. This represents a reduction in the flue loss due to the utilization of a smaller port from 87.4 to 84.8 or 2.6 per cent. This additional heat must have been absorbed by the walls.

If the gas flame is analyzed in the preceding example, it is possible that a logical explanation may be obtained for this difference. In the case of the $^{11}/_{16}$ inch diameter port, a rather short, stubby flame resulted. The hot flue gases traveled the remainder of the distance in the combustion space without any accompanying combustion action. Therefore, any radiation given to the walls beyond the flame must have been due to the CO_2 and H_2O gases. In the case of the smaller port ($^{3}/_{8}$ inch in diameter) the velocity of the gases issuing from it was about 3½ times greater than in the case of the large port. As a result, a long, slender flame was formed. In spite of the fact that the small port produced a longer flame than the large port, the flue gas temperature was lower.

Radiant Energy Factor

Inasmuch as there was more flame surface nearly parallel to the combustion chamber walls in the case of the smaller port than there was in the case of the flame from the larger port, considerably more energy was apparently given to walls by radiation in the case of the smaller port. It seems logical to assume, therefore, that the emissivity factor was larger for the flame than for the hot gases. That this must have been the case is borne out by the data which showed that despite factors tending to make for less radiant energy being given to the walls, the longer flame resulted in 2.6 per cent more energy being radiated to the walls than when the shorter flame was employed. This represents an increase of over 20 per cent in the heat received by the wall.

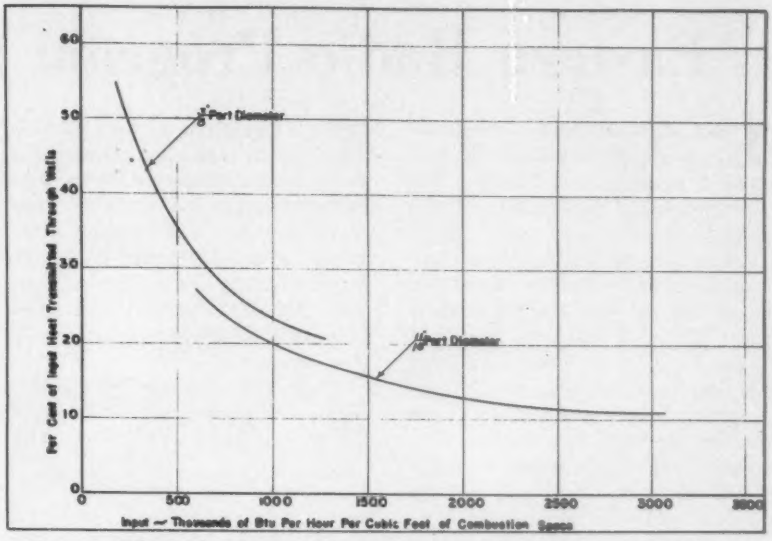

Figure 2—Effect of heat input and burner size on quantity of heat transmitted through furnace walls

By assuming the percentage of convected heat as remaining constant, which seems to be a valid assumption, this increase must be done only to radiation.

During earlier tests on another furnace actual heat loss through the combustion chamber walls was measured by a water jacket placed around the furnace. The two port sizes, $^{11}/_{16}$ and $^{3}/_{8}$ inch in diameter, were also tested on this furnace. At an input rate of 1,000,000 B.t.u. per hour per cubic foot of combustion space an increase in the heat transmitted through the walls of about 30 per cent was obtained when employing the smaller port. The difference in heat transmitted through the walls for varying inputs is shown graphically in Figure 2.

Having definitely established the zone of combustion for this particular type of flame, the cause of the difference in heat transmitted to the wall must be due to the difference in the flame characteristics. If the emissivity of the flame and hot flue gases were the same, little difference in the flue gas temperatures and heat transmitted to the walls would be expected. Inasmuch as this was not the case, it is reasonable to assume that the difference is due to a larger emissivity factor for the flame than for the hot gases. Unfortunately, the data obtained during these investigations are not in a form which will allow an evaluation of emissivity factors. However, it is believed that a definite trend has been discovered which will aid in further explorations into the field of heat transmission.

APPENDIX

Bulletins Prepared by the American Gas Association Testing Laboratories for the Committee on Industrial Gas Research

Report No. 685—A Study of the Characteristics of Burning Gas with Preheated Air.

Report No. 692—Research in the Elimination of Noise in Industrial Gas Burners. (First Bulletin)

Report No. 723—Research in Fundamentals of Combustion Space Requirements in High Temperature Gas Furnaces.

Report No. 724—Research in the Elimination of Noise in Industrial Gas Burners. (Second Bulletin)

Report No. 746—Research in the Effect of Operating Temperatures on the Combustion of Industrial Gas. (First Bulletin)

Report No. 748—Research in the Effect of Operating Temperatures on the Combustion of Industrial Gas. (Second Bulletin)

Kansas City Company To Use Gas Lights

THE second major super candle power gas light installation is to be made in Kansas City within the next month. Five super candle power gas lamps have been ordered to light up the front of the Kansas City Gas Company. Each of the five lights generates 3,000 candlepower of light.

The first installation of gas lamps was made last July at the Cities Service Oil Company service station. At this station five posts with two lamps each were installed. The gas lights at this station have attracted much attention and, it is believed, have aided the company to increase its business.

Eastern Radio Program Gains Favor

ENTERING its third month on the air, The Mystery Chef radio program is reaching its full stride. The best evidence of the popularity of the program and the real test of its effectiveness is the demand for the 100-page recipe book, which is offered free to all listeners who call in person at offices of the participating gas companies for it. Some 358,201 copies of the book have been distributed to participating companies and in many cases the first supply of books has been exhausted and second orders for additional copies have been received. In localities where the program has been particularly successful in stimulating interest more than 10% of the customers have requested the book.

In each broadcast explicit instructions are given to the effect that listeners must not write for the book. Despite this injunction a large amount of mail is received by radio stations and by gas companies, some of it coming from residential customers of participating gas companies, but by far the larger volume originating from persons who reside outside the broadcasting area and who have radio sets powerful enough to receive the program. That the public is genuinely appreciative of the program as a whole is apparent from the number of letters of commendation received by broadcasting stations and utility companies.

New Companies Join Program

Further evidence of the success of the program is afforded by the addition of a number of new companies since the initial broadcast on December 4. A total of 110,000 new meters has been entered in the program since that date, due to the volume of requests made for the book at the offices of the companies concerned. The first sale of electrical transcriptions has been made to the Metropolitan Utilities District of Omaha, Nebraska, through their advertising counsel, Bozell & Jacobs. The program started in Omaha on January 21 on a twice weekly basis over Station WOW at 10 A.M. The contract for radio time has been executed for a period of twenty-six programs with the privilege to extend it. The electrical transcriptions furnished Omaha are those used by the Syracuse and Rochester, New York, stations. The commercial announcements are prepared by the advertising agency for the Omaha Company, and distribution of the recipe books will be made to customers of that company.

Negotiations are now being had with an advertising agency in Honolulu looking to the broadcasting of the

program under the auspices of the gas company there. The cost of electrical transcriptions ranges from a low of $15 per transcription for companies having in service 30,000 domestic meters to a high of $75 per transcription for companies having one million meters or more in service.

The many ways in which the radio scripts may be used to advantage as promotional material by companies is illustrated by republication in pamphlet form of the New Year's Day talk by The Mystery Chef. This talk describes how most of the world's greatest men have made the art of excellent cooking one of their hobbies. The Providence Gas Company was greatly impressed by the possibilities of this broadcast and the reprint has been distributed through the mail to a select list of local business and professional men. A striking full-length cutout of The Mystery Chef designed for window and sales floor display use will be distributed to participating companies in the near future.

The large amount of interest evidenced by both men and women in recipes has been one of the outstanding revelations of the program to date. As proof of this interest we reproduce the following letter:

DEAR MYSTERY CHEF:

I am taking the privilege of an old subscriber, and writing to you. I have nothing but commendation for your talks, they fill a great gap. My vocation is photo-engraving, my avocation the same as yours, and excuse my conceit, I'm a darned good cook, too. I usually do all the cooking on week-ends. It gives friend wife a spell and I have a lot of fun. Yesterday was my birthday—and the wife was sick. Around 9 o'clock I roused Dolf—15—and Dave—14—to mix a double batch of hot scones. Your recipe—you can't go wrong. As Mrs. and I were having our tea in bed we heard Dave marshalling the rest of the tribe to the bathroom to wash up. After a while I went downstairs to see how the scones turned out. I don't know. There were none left. Dave said he just mixed 'em like the book said, turned the oven regulator like the book said, and turned 'em like the book said. I presume they were all right.

Dolf and I got the dinner. He crumbled the bread. I fried the celery and onions. We don't care for chestnuts so I used thyme and parsley, and stuffed the bird. I peeled the potatoes. Dolf prepared the spinach and cauliflower. Giblets on to simmer for the gravy with a dash of kitchen bouquet. I made a deep dish apple pie. A whole dish of cranberry sauce was still fresh from Xmas in the refrigerator. No hurry. In the intervals of basting the turkey I got Dolf to mix a big batch of pancake batter for breakfast—it was only just enough—and put in a jug in the icebox. On our new gas range we have a hot plate for cakes. Makes it a pleasure to cook short orders of cakes, bacon or sunflowers a la Child's window.

When I think of mother back on the farm in New Zealand forty years ago cooking for the old man and ten kids to say nothing of Harry Doreen and Tal Frees, the hired hands, with nothing but a sheet iron stove, the pump in the backyard and every other *in*convenience, when I remember what appetites we all had, I can dimly realize how mother worked. Breakfasts!! My God. Oatmeal—Quaker oats weren't invented—bacon, kidneys, eggs, chops, bubble—squeak. It must have been good for us for so far the only one gone is Dad who went last year at 89. I am the youngest—46 yesterday. Some years ago I called on Percy with the girl I didn't marry. When we arrived he was splitting wood. After

the introductions he blurted out "When you get married, Syd, for goodness sake get a gas stove. Gas is easier chopped." I consider the modern refrigerator and automatic insulated gas range nothing less than a godsend. Mother cooked her turkey on a spit and got all hot and bothered basting.

Yesterday we listened to the radio between turns of the turkey. Dinner? Adrienne said how lovely and green the spinach was. Barbara wanted more stuffing. Julian howled for more "puds and dravy." Mother didn't want a thing so I gave her those ribs out of the back with a little creamed cauliflower. Dolf and Dave? Really chef I'm ashamed. I think I can make soup off the carcass. Pie? Oh yes. It's in the refrigerator. It will keep there.

I really think that before long we will hear no more about escoffiers. Anyone can cook now by modern methods. Impress on people that Voltaire said there is only one thing we can do thrice a day every day of the year and still enjoy. So make that one thing as fine as possible. A pinch of basil in the tomatoes. And—I'll go to the mat on this—whole cloves in the apple pie. Don't argue. Whole cloves. I like your small book and must buy your other one. They seem written for the average family. I wish you would point out in your talks that the difference between "plain cooking" and delightful meals is so very small. Seasonings last a long time. A little saffron in the soup. A pinch of caraway in the kidneys. An extra can of asparagus. A pound of mushrooms. A little more butter and a pint of cream. What does the total weekly cost amount to? Two dollars is generous for making eating a delight. Tell the men to take a crack at it more often and know the fun and pride of dishing a dinner up piping hot and saying like old Tubal Cain "Hurrah for my handiwork."

Sincerely,
(signed) S. E. P.

P.S.

I can remember Tal Frees coming in one forenoon and eating up the best part of a lush batch of scones Gertrude had made and remarking in his slow drawl "Scones are things you can't eat many of."

Pollard Heads Seattle Gas Company

J. F. Pollard

JAMES F. POLLARD, vice-president and general manager of the Seattle Gas Company, Seattle, Washington, has been made president of the company following the resignation of Franklin T. Griffith. Mr. Griffith has been named chairman of the board. P. R. Dunbar was chosen treasurer, and C. K. Poe, secretary.

Mr. Pollard is widely known in the gas industry, having presented a vigorous speech in favor of national advertising at the last A. G. A. convention in Chicago. At that time he was representing the Pacific Coast Gas Association of which he is first vice-president.

Born in Missouri in 1889, Mr. Pollard was graduated from the University of California at Berkeley in 1912 with a degree of Bachelor of Science in the College of Electrical Engineering. After graduation he was employed for three years in construction work on a large hydro-electric project for the Pacific Gas and Electric Company. During the following three years, he was assistant engineer in the gas and electric division of the California Railroad Commission.

After two years with the Sierra and San Francisco Power Company and Coast Valleys Gas and Electric Company in northern California, Mr. Pollard became general manager of Coast Valleys Gas and Electric Company on January 1, 1920. He was later elected vice-president and general manager of that company and was connected with it for ten years, during which time it changed hands three times, finally being purchased by the Pacific Gas and Electric Co.

On December 31, 1930, he became general manager of the Seattle Gas Company, being elected vice-president in 1932 and president in 1936.

A.G.A. Rate Committee Chairman Appointed

Alfred I. Phillips

APPOINTMENT of Alfred I. Phillips of New York City as chairman of the important Rate Structure Committee, has been announced by L. B. Denning, president of the American Gas Association. Mr. Phillips has been a member of the committee since 1929 during which time he has contributed considerable material, particularly in reference to therm rates, special rate forms and rate application.

Following graduation from Massachusetts Institute of Technology, Mr. Phillips went to The United Gas Improvement Company, after which he had a wide and varied experience in practically all phases of gas company operation. As service engineer of the American Gas Association he visited Great Britain and, among other things, studied the therm method of charging, then new, and British methods of rate regulation and rate forms. Also as service engineer, Mr. Phillips made a study of service charge rates which at the time were another innovation. Now in consulting practice, he has done considerable work on development of rates for house heating and industrial service.

Under the able guidance of Mr. Phillips, the Rate Structure Committee expects to produce a report containing practical consideration of current rate matters.

German Laws Forbid Uneconomic Competition

AS of December 13, 1935, Reichschancellor Adolf Hitler announced new laws covering the economics of utility energy distribution in Germany. They include the following interesting points:

That the laws are established on the basic idea that utility services are an important part of the economic and social life of Germany and harmonious operation of all factors involved must be permitted. Therefore, the Government power will be used to prevent damaging developments due to competition between electricity and gas. It will, at the same time, provide for the furnishing of safe and continuous services as cheaply as possible.

Gas and electric prices can be adjusted by the order of the Minister of Commerce. Similarly, he has the right to grant permission to extend mains, build new plants, or make other changes in the physical structure of the systems.

Various other laws deal with the details of how this public utility law shall be administered for the benefit of the utilities concerned. Much is designed to permit the Minister of Commerce almost unlimited power to control all public utilities and to order one or the other to take over a certain class of business. Apparently, no method of appeal is provided, and it seems fine or imprisonment is threatened to utility company leaders who do not obey the details of the new law.

This is reported at considerable length in the December 21, 1935, issue of Das Gas-Und Wasserfach.

Three N. Y. Hotels Return to Gas for Cooking

C. E. Lucke, Jr.

By CHARLES E. LUCKE, JR.

Chairman, Commercial Cooking & Baking Committee, Industrial Gas Section

THREE prominent New York City hotels, all members of the same chain, recently returned to gas as their kitchen fuel after unsatisfactory trials of the latest type of forced draft coal burning ranges. The experiences of these hotels with this equipment, and the manner in which gas was re-installed by the hotel and restaurant division of the Consolidated Gas Company, are related here with the possibility that this case history may be helpful to other gas companies experiencing similar competition.

Despite the objections of the manager and head chef of the first hotel, the installation was made there in November, 1934. The other two installations we were able to have postponed, one until December, 1934, and the other until January, 1935. In each case, the coal equipment was installed on a six months' trial basis. Each installation represented five sections of coal range with a cost to the hotel chain of $2,000 each, or a total of $6,000.

The equipment used as a single oven modernized coal range with automatic forced draft, insulated oven and thermostatic heat control. Using No. 1 buckwheat coal, hand feeding through the top was required. With such a cheap coal, economical operation was to be expected.

Independent Survey

High cooking top temperatures were also anticipated but when reports came in of unbearably hot room temperatures and of insufferably hot working conditions for the chefs, an independent agency was selected to make a survey. Their findings were:

"The blower unit which controls the heat (draft) of each range was located beneath the oven and it was observed that each of the motors on the five ranges was exceptionally hot. The temperature observed on the underside of the frame of No. 3 motor was found to be 52° C. (126° F.). The temperature on the top of the frame of No. 5 motor was 85° C. (185° F.). From an examination of the conditions this would be expected; first, because the motors are located only a few inches beneath the bottom of the hot air (combustion gases) duct which passes around the oven, and secondly, because the ambient air which cools the motors is hotter than cooling air should be for a 55° C. (temperature rise) motor. The speed of the motor on No. 3 unit was found to be 2000 rpm. This is in excess of the rated speed of 1725 rpm. and may be due in part to the field winding resistance being higher than normal due to the abnormal temperatures thus weakening the field. Since the power required to drive a centrifugal blower varies as the square of the speed, the armature may be somewhat overloaded. At the time of the survey it was impractical to measure the motor current as the parts were inaccessible and too hot to handle.

High Temperatures Noted

"The temperatures observed were:

(1) Air temperature at edge of hood and down 1 foot in front of No. 3 range. The location was about where the cook would sometimes be required. 137° F. (58° C.)

(2) Air temperature 1 inch above floor, 1 foot out from range. 117° F. (47° C.)

(3) Air temperature middle of aisle between counter and ranges 5 feet above floor (slight draft). 113° F. (45° C.)

(4) Air temperature at bottom of blower unit compartment just inside of grill (air inlet door). 140° F. (60° C.)

(5) Temperature of bottom of duct just above motor. over 212° F. (100° C.)

(6) Temperature of frame of motor for range No. 5 (top side—by thermometer shielded from draft by layer of tape which just covered bulb). 185° F. (85° C.)

(7) Temperature of frame of motor for range No. 3 (bottom side by thermocouple between nameplate and frame). 126° F. (52° C.)

"These observations were made after the noonday rush and on a day when the demand for comparatively light (day after Christmas). The conditions reported would be expected to be hotter on a busy day.

"In view of the above data, it is quite apparent that the ambient air conditions are much too high for a 55 degree motor if it is carrying load.

"Another difficulty experienced was that the lag between the temperature of the cooking top and the operation of the thermostat was excessive. This is due to the remote location of the thermostat which apparently is caused to function by the outlet oven air. This permits the cooking top to cool down before the thermostat will again turn on the blower."

Constant contact by representatives of the hotel and restaurant division of the Consolidated Gas Company revealed the following:

1. Average mo. gas consumption

	Hotel I M cu.ft.	*Hotel II M cu.ft.*	*Hotel III M cu.ft.*
before using coal	218.5	177.4	390.5
after using coal	112.5	71.4	153
lost using coal	106	106	237

2. Reported consumption on the battery of coal ranges in each hotel was approximately 9½ tons of coal per month at a cost of $66.50, while cost of electricity for the blowers was estimated at $11.
3. These hotels found that the original and replacement top plates burned out frequently, in some instances in less than a month. Finally, such heavy top plates, about two inches, were installed, that it was reported that the heating up time became excessive and the chefs were able to remove the plates only with extreme difficulty.
4. In order to get the range top hot enough to work on, the rate of combustion had to be so increased that the oven temperature became excessive producing poor looking charred roasts and causing excessive meat shrinkage losses. When the oven thermostat was set for a proper roasting temperature, then the top was so cool it was not usable.
5. Chefs informed us that the ovens were not tight and that ashes sifted through from the fire and flue box into the oven, spoiling appearance of food in the oven.
6. Due to the excessive heat, motor and electrical control replacements were said to be both expensive and frequent.
7. Not only was extra labor required to fire the ranges, but this extra help had to report an hour and a half earlier in the morning than was necessary with gas in order to get the ranges hot enough for the chefs to work on.
8. Every time green coal was applied, an objectionable odor of incomplete combustion was reported and which was readily apparent. It took such a range about one hour to get back to temperature. Clinkering necessitated taking the range out of active service frequently.
9. The chefs experienced extreme discomfort in working on these ranges due to the excessive heat and were constantly disgruntled.

10. Part replacement expense was excessive, not only on motors, blowers, electrical controls and top plates, but also on crumbling firebrick and warped oven linings.

New Subsurface-Pressure Gauge

RECOGNIZING the need for accurate measurements of pressures and temperatures within the reservoir and well "flow strings" in order to apply scientific methods to the solution or analysis of many problems encountered in the production of oil and gas, the United States Bureau of Mines, Department of the Interior, recently has issued a report describing the design, construction and operation of a new subsurface-pressure gauge.

This instrument has been developed by W. B. Berwald, H. A. Buss and C. E. Reistle, Jr., at the Petroleum Experiment Station of the Bureau, Bartlesville, Oklahoma, and has been used successfully by the Bureau engineers for the past year. Report of Investigations, 3291, Bureau of Mines Multiple-Diaphragm Recording Subsurface-Pressure Gauge, may be obtained without cost upon application to the Information Division, U. S. Bureau of Mines, Washington, D. C.

A. H. Emery Promoted

ALDEN H. EMERY, assistant chief engineer of the Experiment Stations Division, United States Bureau of Mines, has been appointed assistant manager of the American Chemical Society, a newly created office, it was announced January 18. Mr. Emery, who is 34 years old, is a native of Lancaster, N. H. He is a graduate of Oberlin College and Ohio State University, and is now secretary of the society's gas and fuel division.

Gas Appliance Sales Increase in S. F.

DURING the year 1935 the San Francisco unit of the Gas Appliance Society of California sold 15,006 gas ranges as compared with 9,807 in 1934 and as compared also with 67 electric ranges sold in 1935 by the San Francisco dealers.

In the same year, 7,767 automatic gas water heaters and 2,594 tank gas water heaters were sold in the same area, compared with 5,595 and 2,364 respectively in 1934, and as compared also with 10 electric water heaters sold in 1935 by San Francisco dealers.

Texas Pipe Line Project Lacks P.W.A. Funds

RECENT reports on the proposed gas pipe line from Panhandle, Texas, to Detroit, Michigan, to be built with P. W. A. funds at a cost of $46,345,058, indicate that the funds are not likely to be made available. According to Captain Moore, P. W. A. expediter for Texas projects, the application for funds has no official status at the Public Works Administration due to the fact that no official public body has been authorized by the Texas Legislature to apply for the funds.

The matter of creating a public authority to develop the project has twice been before the state legislature, but was not acted upon either time. The present applicant is the Texas Gas Construction Company, which filed the application with the hope of securing the necessary legislation to authorize it to proceed with the project in an official capacity.

In view of the attitude of the Texas Legislature toward this project and by reason of the fact that no funds now available to P. W. A. may be allocated for private projects, it is very improbable that any study will be made or any action taken on the project by P. W. A., according to Captain Moore.

Westchester Lighting Head Dies

EUGENE H. ROSENQUEST, president of the Westchester Lighting Company, Mt. Vernon, N. Y., and the Bronx Gas and Electric Company, died suddenly January 26.

Mr. Rosenquest, who was very active in the American Gas Association and the Empire State Gas and Electric Association, was born in Tarrytown, N. Y., on May 18, 1869. In 1896 he joined the Bronx Gas and Electric Company as superintendent and rose to president of the company in 1932. In April, 1926, he was elected president of the Westchester Lighting Company and in January, 1932, he became president also of the Yonkers Electric Light and Power Company.

He was to have become a trustee of the Consolidated Gas Company of New York on the day following his death.

Certain Things for Certain Jobs

A PECULIAR old chap was Kilminster Osbourne Watt—called by his pals "Kilowatt"—and it was a most appropriate nickname, for he was an electrician by trade. His imagination frequently outran his ingenuity, and everyone admitted that he had ingenuity for half a dozen electricians. His little workshop at home was littered up with half-finished ideas for patents, ideas that looked so good it was hard to discover their technically obvious and fundamental weaknesses.

Old Kilowatt's greatest triumph was when he drove up to work one fine summer morning in his electrical refrigerator, and then calmly proceeded to mend a lengthy gash in his trousers with the same useful piece of kitchen equipment. During lunch-time, from the recesses of the refrigerator he produced a most appetizing lunch, and reproduced those popular gramophone records "Wearing his old school tie" and "Play the game, you cad." "Gee!" the apprentices said, open-mouthed, "he's a hundred years ahead of his time."

But with all the applause he evoked, and the envy his ingenuity engendered, there was a fly in his ointment. He had wanted his star turn to be the boiling of his billy on the same contrivance as had already carried him to work, and which had incidentally kept his lunch stone cold, but his luck had deserted him. Long after the boys had boiled their billies on the workshop's dependable gas rings and were discussing Peter Pan's prospects for the Cup, the poor old man's electrical apparatus was only getting his billy of water hot, and it looked as though the whistle would blow before he could enjoy his tea. It wasn't so much the tea he was likely to miss that disappointed him, as the failure of electricity to live up to his expectations; but the "poor old nut," as they affectionately called him, was making the same mistake as so many of his misguidedly enthusiastic electrical friends. He had harnessed his electrical refrigerator, and had made it perform all sorts of jobs for him, before a delighted audience, by using it mechanically—by using electric power. Now he wanted to use electric heat, and electricity was found wanting, and he couldn't understand the difference. Surely if a thing would do all that he had made it do, it should be able to boil water—it was hard to think that "stuff" which some old "ziff" had discovered over a hundred years ago was still better for some jobs than electricity. "Darn it all, it isn't right," he complained bitterly to some of his workmates. "Garn," said a passing apprentice, "how long is it since they discovered water . . . . and have they found anything since that's better to make tea with?"

And the moral of our little story is contained in the apprentice's irreverent query. Some things are inherently better for some jobs than others. If it's heat you want, it's gas you need!

—*Australian Gas News*

Affiliated Association Activities

Strong Program Arranged for New England Meeting

ABROAD analysis of the vital problems facing the gas industry as well as discussions of local operating and sales problems will reward those who attend the annual meeting of the New England Gas Association, to be held in Boston, Mass., February 13 and 14. The final program, announced by Clark Belden, executive secretary, is filled with major topics to be discussed by men in the forefront of the gas industry today.

Addresses by Herman Russell, Ernest R. Acker, Walter C. Beckjord, Alexander Forward, Hugh S. Magill and H. R. Sterrett on such subjects as the economics of combination service, public relations, sales philosophy, trade association activities, the investor's viewpoint and national advertising are only a few of the high lights of the program. R. H. Knowlton, president of the New England Gas Association, will preside at the meeting.

Following is the complete program:

Thursday, 10 A.M.

Presentation of Awards.

The Present and Future of the Gas Industry —Alexander Forward, managing director, American Gas Association.

Election of Officers and Directors.

The Association's Year—Clark Belden, executive secretary.

President's Address—R. H. Knowlton.

A Sales Philosophy—Walter C. Beckjord, vice-president and general manager, Columbia Gas & Electric Corp.

The Place of New England in the Business Recovery Picture—Winthrop L. Carter, president, New England Council.

Thursday, 2 P.M.

House Heating Sales Methods—Cecil C. Ogren, house heating engineer, Malden & Melrose Gas Light Co.

Commercial and Industrial Possibilities—Stuart F. Morgan, supervisor, gas utilization, New Bedford Gas and Edison Light Co.

Operating High Spots—C. P. Warner, general superintendent, Manchester Gas Co.

Social Security Legislation—C. J. Walker, assistant treasurer, New England Power Engineering & Service Corp.

Plumber-Utility Cooperation—I. B. Skau, Hartford.

Market Analysis for Gas Companies—William Webster, vice-president, Narragansett Electric Co.

Long-Term Appliance Financing—H. L. Dalbeck, general auditor, New England Gas & Electric Association.

Friday, 10 A.M.

A.G.A. Range, Water Heater, and Refrigerator Promotion—R. J. Rutherford, assistant to vice-president, New England Gas & Electric Association.

Special Hook-up of Regular "Mystery Chef" Broadcast.

Value of Kitchen Heating to the Gas Industry—R. M. Keeney, industrial engineer, The Connecticut Light & Power Co.

Manufacturers' View—1936—R. B. Wright, chairman, Manufacturers' Division.

Getting Our Share of the Business Increase —Hall M. Henry, assistant to vice-president, The Utility Management Corporation.

Management Reviews Home Service Possibilities—John J. Quinn, assistant to vice-president in charge of sales, Boston Consolidated Gas Company.

Sales and the Modern Gas Service Department—David W. Price, gas engineer, The Connecticut Light & Power Company.

Friday, 2 P.M.

Why National Gas Advertising?—H. R. Sterrett, president, New Haven Gas Light Co.

The Utility Situation from the Investors' Standpoint—Hugh S. Magill, president, American Federation of Investors, Inc., Chicago, Ill.

Public Relations—Ernest R. Acker, president, Central Hudson Gas & Electric Corp.

Much Ado About Nothing—Herman Russell, president, Rochester Gas and Electric Corp.

Convention Calendar

FEBRUARY

6-7-8 A. G. A. Eastern Natural Gas Sales Conference
William Penn Hotel, Pittsburgh, Pa.

13-14 New England Gas Association
Hotel Statler, Boston, Mass.

13-14-15 A.G.A. Mid-West Regional Gas Sales Conference
Sherman Hotel, Chicago, Ill.

19-21 Gas Institute of New Zealand
Christchurch, N. Z.

19-21 Southern Gas Assn. Annual Convention and A. G. A. Sales Conference
Roosevelt Hotel, New Orleans, La.

MARCH

2- 6 Regional & Group Meetings of A.S.T.M.
Pittsburgh, Pa.

10-11 A. G. A. Industrial Gas Section, Industrial Gas Sales Symposium
Detroit, Mich.

APRIL

2 New Jersey Gas Association
Berkeley Carteret Hotel, Asbury Park, N. J.

6- 8 A. G. A. Distribution Conference
Memphis, Tenn.

13-15 Mid-West Gas Association
Minneapolis, Minn.

29-May 1 Missouri Association of Public Utilities
Jefferson Hotel, St. Louis, Mo.

MAY

5- 7 Pennsylvania Gas Association
Lodge of Sky Top, Sky Top, Pa.

5- 8 A. G. A. Natural Gas Department
Baker and Adolphus Hotels, Dallas, Texas

Wk. 11th National Fire Protection Assn.
Atlantic City, N. J.

22 A. G. A. Executive Conference
Hotel Traymore, Atlantic City, N. J.

25-27 A. G. A. Production and Chemical Conference
New York City

26-27 A. G. A. Industrial Gas Section, Commercial Gas and Hotel and Restaurant Sales Symposium
Washington, D. C.

JUNE

17-20 American Society of Mechanical Engineers
Dallas, Texas

29-July 3 American Society for Testing Materials
Atlantic City, N. J.

JULY

6- 9 American Home Economics Association
Olympic Hotel, Seattle, Wash.

8-10 29th Annual Convention Canadian Gas Association and Northwest Conference Pacific Coast Gas Association
Hotel Vancouver, Vancouver, B. C.

SEPTEMBER

7-12 Third World Power Conference
Washington, D. C.

OCTOBER

Wk. 26th A.G.A. Convention
Atlantic City, N. J.

Gas Association Secretary Turns Author

EVEN the thought of losing a job throws most people into a panic. Clark Belden, now executive secretary of the New England Gas Association, lost his job a few years ago and developed a well-defined case of panic. But panic means confusion of mind and action. Belden overcame his panic, organized, eventually found a job, and put his experience, plus that of many others, into an excellent book titled "Job Hunting and Getting." Perhaps you will wonder, as the reviewer did, how anyone could fill a worth-while book on this subject. The author did it, and what is more, he has made the book absorbing.

Too frequently a book bears an intriguing title on a subject of vital concern and a reading proves it to be a recital of known generalities. This book avoids the things that a man with ordinary common sense knows or should know. It gets down to specific suggestions on what to do and how to do it and also what to avoid doing. The art, science, or whatever it is, of finding a job is one which many have to face sometime in life. Like everything else, finding employment can be systematized to advantage. "Job Hunting and Getting" tells how it can be done.

R. L. Fletcher, engineer of operations of the Providence Gas Company, told the reviewer that he believes Belden's book should be read by

The man out of a job—An inspiring, intelligent help to him in the oft discouraging search for employment.

The wife of the man out of a job—A practical guide to her who can help or unwittingly hurt so much.

The college graduate—A clear picture to him showing that the world is not his apple and how he may use his education in seeking and holding employment.

The man who employs—As valuable to him as to the man seeking a job—the art of employing is merely the antithesis of the art of applying for employment.

The man who has a job—He cannot help but value to a greater degree the position he holds.

"Job Hunting and Getting" is published by L. C. Page & Company of Boston, Mass. Price is $2.50.—K. R. B.

Employees Honored for Life Saving

Edward J. Cantwell

Joseph F. Senkow

William Barry

Joseph Wahl

David Nolan

Employees of The Brooklyn Union Gas Company who have been presented with McCarter awards during the past year signifying that they have performed some conspicuous life-saving service by the use of the Schafer prone pressure method of resuscitation. These employees were honored at the annual Service Emblem dinner.

Edward J. Bagley

Louis Dickhardt

Charles McBride

John Cooney

George S. Geary

Pennsylvania Gas Association

THE annual convention of the Pennsylvania Gas Association will be held at Skytop, Pa., May 5-7.

As has been the custom for many years there will be morning and evening sessions, the afternoons being devoted to golf and other social affairs. Talks by several well-known leaders of the industry will feature the evening sessions May 5 and 6. An interesting and informative program is being arranged for the business sessions by the Program Committee, headed by Allyn C. Taylor, president of the Consumers Gas Company of Reading.

E. W. Ehmann, main line district manager of the Philadelphia Electric Company, president of the Association, has announced the appointment of the following committee chairmen: Accounting, J. W. Mackie, Wilmington Gas Company; Distribution, W. G. B. Woodring, Allentown-Bethlehem Gas Co.; Entertainment, M. N. Bailey, American Meter Co.; Finance, M. H. Parkinson, Central Penn Electric Co., Altoona; Highways and Bridges, Leon B. Eichengreen, Philadelphia Electric Co.; Membership, M. A. Boylan, Scranton-Springbrook Water Service Co.; New Business, H. S. Christman, Philadelphia Gas Works Co.; Papers and Program, Allyn C. Taylor, Consumers Gas Co., Reading; Production, P. T. Dashiell, Philadelphia Gas Works Co.; Public Relations, H. H. Ganser, Philadelphia Electric Co.; Publicity, William H. Evans, Philadelphia Electric Co.; Tax, F. W. Lesley, York Gas & Electric Co.; Time and Place, H. S. Bair, York Gas & Electric Co.

Officers of the Association are: E. W. Ehmann, president; H. N. Squier, N. B. Bertolette and W. A. Norris, vice-presidents; F. W. Lesley, secretary; W. G. Sterrett, treasurer; A. B. Millar, managing director.

New Jersey Gas Association

THE twenty-fifth annual meeting of the New Jersey Gas Association will be held at Asbury Park, April 2. Approximately 500 persons are expected to attend the one-day session.

It is expected that L. B. Denning, president of the American Gas Association, will head a strong list of speakers at the New Jersey meeting. Of particular interest is a gas water heater symposium which will include discussion under five headings: our market, our competition, new water heater developments, plumber dealer cooperation, and modern selling methods.

Natural Gas Department

William Moeller, Jr., Chairman **A. E. Higgins, Secretary** **George E. Welker, Vice-Chairman**

Natural Gas Committees Appointed for 1936

Wm. Moeller, Jr.

ANNOUNCEMENT has been made by William Moeller, Jr., chairman of the Natural Gas Department, of the personnel of the committees who will carry on the work of the department for the year.

Many of the names on the committee lists will be recognized as those of men who have served for a number of years in a continuing capacity and who are largely responsible for some of the monumental reports now available to the industry. They have contributed much to the technical efficiency of the industry which has enabled it to continue its remarkable development.

The following have been appointed by Chairman Moeller:

Executive Committee

H. C. Cooper, J. D. Creveling, T. B. Gregory, N. C. McGowen, William Moeller, Jr., ex-officio and George E. Welker, ex-officio.

Managing Committee

William Moeller, Jr., chairman, George E. Welker, vice-chairman, F. H. Brooks, H. L. Dickerson, T. B. Gregory, R. W. Hendee, A. W. Leonard, H. L. Masser, H. L. Montgomery, J. R. Munce, F. F. Schauer, T. J. Strickler, M. W. Walsh and T. R. Weymouth.

Advisory Committee

J. B. Tonkin, chairman, E. L. Brundrett, F. L. Chase, H. C. Cooper, J. D. Creveling, L. B. Denning, R. W. Gallagher, H. J. Hoover, K. C. Krick, A. W. Leonard, S. W. Meals, A. B. Macbeth, N. C. McGowen, W. H. McKenzie, B. H. Oliphant, G. W. Ratcliffe, T. J. Strickler and H. A. Wallace.

Main Technical and Research Committee

H. C. Cooper, chairman, T. R. Weymouth, vice-chairman, H. E. Bates, W. C. Beckjord, F. L. Chase, J. D. Creveling, H. D. Hancock, T. H. Kerr, N. C. McGowen, William Moeller, Jr. and F. F. Schauer.

Gas Measurement Subcommittee

T. R. Weymouth, chairman, M. E. Benesh, co-chairman, H. S. Bean, Edgar Buckingham, E. A. Clark, H. D. Hancock, T. H. Kerr and William Moeller, Jr.

Pipe Line Flow Subcommittee

H. D. Hancock, chairman, George H. Baird, vice-chairman, A. F. Bridge, R. W. Hendee, E. L. Rawlins, E. F. Schmidt and T. R. Weymouth.

Subcommittee on Gas Well Deliveries

N. C. McGowen, chairman, M. A. Abernathy, H. S. Bean, J. R. Hatfield, R. W. Hendee, William Moeller, Jr., Berny Oakland, H. C. Otis, E. L. Rawlins, D. A. Sillers and Ross M. Stuntz.

Subcommittee on Natural Gas Conservation Data

E. P. Hindes, chairman, Elfred Beck, Charles C. Hoffman, John S. Ivy, C. R. McKnight, E. L. Rawlins, L. M. Spencer and D. M. Wilson.

Subcommittee on Code for Testing Natural Gas for Gasoline Content

George P. Bunn, chairman, Gordon M. Davidson, W. F. Fulton, C. D. Gard, R. W. Miller, R. N. Parks, E. L. Peck, E. L. Rawlins and E. F. Schmidt.

Special Subcommittee on Orifice Meter Coefficients

T. H. Kerr, chairman, H. S. Bean, J. R. Carlton, George D. Conlee, R. E. Sprenkle and R. E. Young.

Subcommittee on Pipe Line Crossings under Railroad Tracks

Gordon M. Davidson, chairman, H. E. Bates, Ferris F. Hamilton and S. C. Preston.

Committee on Supply Men's Educational Fund

George E. Welker, chairman, J. D. Creveling and S. W. Meals.

Wrinkle Contest Committee

H. J. Hoover, chairman, R. J. Daugherty, W. C. Grant, V. A. Ogilvie and John H. Schalek.

Wrinkle Award Committee

E. A. Clark, chairman, J. L. Foster and D. P. Hartson.

Time and Place Committee

T. B. Gregory, chairman, H. C. Cooper, L. B. Denning, N. C. McGowen and M. W. Walsh.

Natural Gas Conservation Committee

L. B. Denning, chairman, F. C. Brown, vice-chairman, A. F. Bridge, B. M. Nowery and Frank Phillips.

Nominating Committee

J. B. Tonkin, chairman, Frank L. Chase and George W. Ratcliffe.

Natural Gas Production

B. M. Nowery, chairman, J. H. Dunn, L. A. Farmer, J. R. Hatfield, R. W. Hendee, S. W. Meals and W. F. Hartwig.

Natural Gas Transmission

C. H. M. Burnham, chairman, Frank Brewster, Gordon M. Davidson, A. L. Forbes, Jr., J. L. Foster, George T. Kock and B. M. Laulhere.

Natural Gas Utilization and Sales Promotion

J. V. Strange, chairman, W. C. Grant, W. M. Jacobs, F. B. Jones, Henry O. Loebell and C. H. Waring.

Convention To Be Held in Dallas, May 5-8

PROBLEMS peculiar and pertinent to the natural gas industry as well as those of national significance will be discussed at the annual convention of the Natural Gas Department which will take place in Dallas, Texas, May 5-8. With four general sessions and six parallel sessions, the meeting will offer an unusual opportunity to hear speakers on a wide variety of subjects.

Papers now proposed will cover such subjects as, "Geophysics in Oklahoma"; "Means of Informing the Public on the Fundamental Facts of the Natural Gas Industry"; "Sales Possibilities in Air Conditioning"; and "Drilling and Completing Wells." It is also proposed to discuss information on newly developed methods of conservation.

Other subjects on the advance program include: "The Advantages and Disadvantages of Methods of Drilling Wells in Under Pressure"; "Utilization of Natural Gas in Re-Pressuring Operations," and several transmission and compression papers of general interest to the industry. Additional topics will include a number of commercial and sales problems which will be discussed by competent speakers.

Delegates will be afforded an opportunity to see the Texas Centennial in advance of its official opening, as well as to participate in the regular entertainment features provided for the meeting.

Gas Ideal Fuel for Dallas Hospital

By BRUCE CUNNINGHAM

Editor, Blue Blaze News

NATURAL gas, with its qualities of dependability and cleanliness, affords the medical profession a staunch ally in its humanitarian undertaking of alleviating pain and saving life. This gift of nature produces in the most rapid manner the qualities of heat and sterilization, two of the most important requisites of an institution where medical aid is administered. This product is recognized as an ideal fuel for such an institution.

Natural gas is a constant aid in a number of medical and surgical establishments served by the Lone Star System. Among them is the Dallas Methodist Hospital, located in the northeastern part of the suburban Oak Cliff, only a few minutes from downtown Dallas by street car or automobile. This medical center depends on natural gas for all its fuel needs, and either directly or indirectly the entire plant is operated by this commodity.

From the basement boiler room to the sterilization and operating rooms on the sixth floor, this fuel is in demand constantly. Two 150-horsepower gas boilers generate steam for heating and sterilization. The sterilization process is used in the preparation of gowns and instruments before they are used by doctors and nurses in the operating room, where strict sanitation is imperative. A battery of these steam sterilizers is kept in constant readiness to meet any demand that might be made by hospital attaches in carrying out their duties.

Gas Lights Installed

A direct application of gas is found in a number of cases at the hospital. As an emergency measure to guarantee adequate lighting for operations and maternity cases, in the event other sources should fail, gas lights have been installed in operating rooms, the surgery room, and obstetrical department.

A Bunsen burner plays an important part in the hospital laboratory. This device is used to heat cultures for various tests on patients. A double gas burner is applied in boiling needles and instruments used in making the tests.

On each floor of the institution is a service kitchen equipped with a gas-fired toaster. In addition, there is a gas hot-plate for sterilizing various objects after they have been used, such as masks, bottles, nipples and other articles. Gas incinerators with chutes opening on each floor destroy waste materials safely and quickly without smoke, cinders, or odors.

In producing sterile water for various uses, gas again plays an important part. Sterile water is necessary as a protective measure in cleansing open wounds and injuries in which the skin is broken. Distilled water, another important requisite at the hospital, is produced through the aid of gas.

Nourishing and appetizing foods are prepared in a spacious kitchen where gas is the willing servant of Miss Ruth Jones, hospital dietitian, and her corps of assistants. Delectable dishes are made up for the patients, each one having a diet prescribed by his attending physician. Gas aids in preparing these foods in a manner that retains the full vitamin value for the patient.

Called Perfect Fuel

A double unit gas range is used for baking and frying. Other kitchen implements, either directly or indirectly calling for gas in their operation, include steam kettles, steam dish sterilizers, steam dish washers, gas toaster, and a special range on which unusual diets are prepared.

In the employee dining room, a gas urn, a double gas plate, and a gas grill for cooking hot cakes are employed. General foods for the employee personnel are prepared in the regular hospital kitchen.

"Gas makes a perfect fuel for our kitchen," Miss Jones said. "It does not odorize the food, therefore affording more delightful meals for our patients. It is clean, contains no smoke, and no odor accompanies it. A hospital kitchen must be a model of cleanliness, wholesomeness, and sanitation. Gas helps us produce this situation. It is a dependable servant and plays a very important part in the preparation of 450 meals each day."

J. M. Carter, chief engineer at the hospital, believes natural gas is the most suitable and practical fuel for a hospital.

"It is dependable and affords the necessary requisite of cleanliness," he said. "You won't find smoke coming out of our chimney to bring discomfort to our patients. In addition to its quality of cleanliness, gas is economical. It is very essential that a hospital have adequate heat and properties for sterilization. These two necessities are produced effectively with the aid of gas. In all my experience I have never found cause to complain about service of natural gas."

Dallas Methodist Hospital was founded by the North Texas Conference of the Methodist Episcopal Church, South. The first patient, an expectant mother, was admitted on Dec. 24, 1927. The second patient, the baby daughter, was born on Christmas.

Dr. J. H. Groseclose is superintendent of the institution. He and his staff of doctors and nurses have developed the hospital into one of the outstanding institutions of its kind in the Southwest.

"We have always used gas at the hospital," Dr. Groseclose said. "We like its dependability. It is a very necessary commodity in conducting our work of alleviating pain and saving lives. It is sanitary and more economical than any other fuel. It is always available. Even if it did cost more than other fuels, we could not afford to be without our natural gas service."

Three California Companies File New Inducement Rates

THE Los Angeles Gas and Electric Corporation, Southern California Gas Company and Southern Counties Gas Company recently filed with the California Railroad Commission an inducement form of rate to encourage, and retain against electric competition, the use of gas for all domestic purposes. It is estimated that the discount rate will save customers in the Southern California area, around Los Angeles, about $1,250,000 per year.

The schedule provides that it is applicable only to customers using natural gas as their principal fuel for the three combined uses of cooking, automatically operated water heaters and space heating equipment of at least 25,000 B.t.u.—per-hour capacity. The modification of charges is in the form of a discount of 15% below the company's general service schedules G-1 and G-2, on that portion of the monthly billing between $2 and $25.

These companies have certain commercial schedules where, for moderate-sized consumers, the present rate will be higher than the general service rate less the discount, and in such cases customers will be permitted to qualify for the three combined uses to transfer from the commercial to the general service schedules and thereby benefit in the saving.

The new rate becomes effective for meter readings taken on and after February 15, 1936. The three companies are now informing their customers regarding the rate by means of explanatory notices attached to their gas bills, together with an application form showing the appliances in use upon the premises. Numerous field checks will be made to determine the accuracy of the information set forth on the customers' applications, and ultimately it is expected that the checks will cover every meter in this regard. These checks will be made by servicemen as they call at the premises on routine operations. Organizations within the companies have been set up to analyze applications as received and report to the billing department all those customers entitled to the discount. A notation probably will be placed on the bills so as to indicate to the customers whether or not they are receiving the benefit of the new rate.

Supplement to Bibliography on Change-Overs*

Compiled by LUIS HILT, Librarian
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Gas Service Company Looks at 1935 Record

GAS SERVICE COMPANY, Kansas City, new business departments in 1935 enjoyed the best business of any year since 1930, the total value of appliances added to the company lines for the year, sold and rented, comparing favorably to business obtained in the years of 1927 and 1928. In the eleven years since the Gas Service Company was organized business obtained by the new business departments in 1935 was greater than in all but four of these eleven years.

Following are some of the high spots and major accomplishments of the company's new business departments for 1935:

It is estimated that through sales and rentals of appliances, gas sales will be increased more than one billion cubic feet annually.

Appliances added to the company lines in 1935 are expected to show an increase of more than $600,000 in increased revenue on an annual basis.

Total gross new business sales for the year amounted to $1,211,580.

Total value of appliances rented, $708,687.

Total value of appliance sales and rentals, $1,920,267.

Increased appliance and installation sales and rentals, 1935 over sales in 1934, $1,001,149.

Per cent of increase, sales and rentals 1935 over 1934, 108.9%.

Increase in domestic and industrial customers in 1935 for all properties amounted to 4,505.

Average appliance and installation sales per customer, 1935, $8.28.

Net number of central house heating installations sold and rented during the year, 2,662.

Net number large capacity space heaters, used for complete heating of homes, 3,734.

Total number of appliances sold, house heating, domestic, commercial and industrial, 21,403.

Accounting Section

F. L. Griffith, Chairman H. W. Hartman, Secretary E. J. Tucker, Vice-Chairman

Accounting Section Organizes for 1936 Activities

F. L. Griffith

AT a meeting of the Advisory and Managing Committees of the Accounting Section, held at Association Headquarters, December 17, under the chairmanship of F. L. Griffith, a program of activities for 1936 was adopted.

After thorough discussion of the various suggestions placed before the meeting, the following subjects were approved for inclusion in the programs of the various committees.

Accounting Machines Committee

In addition to acting in an advisory capacity to the other committees of the Accounting Section where the application of accounting machines is involved, this committee will study accounting machine developments of interest to the industry, prepare Fundamental Charts and collect Wrinkles and present those which might prove generally useful.

Customer Relations Committee

I. K. Peck, chairman of the Customer Relations Committee, stated that he had received several suggestions for the attention of the committee but after consideration it was concluded that a definite program for the year could best be developed at the committee's organization meeting.

General Accounting Committee

In reference to the activities of this committee a great deal of suggestions had been received to the effect that more attention should be devoted to work of a general accounting nature of interest to corporation managements and accounting executives, including such matters as the accounting involved in social security legislation, and in the legislation creating and covering the operation of the Securities and Exchange Commission, to the proper treatment of various items of revenue and expense from the standpoint of income tax returns and depreciation accounting. The organization of the committee and the development of the plan of its operations were left in the hands of F. L. Griffith, chairman, Accounting Section, and H. L. Gruehn, chairman, General Accounting Committee.

Customer Accounting Committee

It is planned to have this committee select possibly three subjects for study from the following:

Trend of Billing Systems.
Advantages and disadvantages of the Field Card Meter Order System.
Treatment of Delinquent Customers with Good Credit Records.
Ways and Means of Reducing Delays in Disconnecting Service.
Systems Departments, Routines and Manuals.
Gas Sales Statistics.
Credit History Records.
Accounting for Rental of Gas Appliances.

Office Management Committee

W. N. Geiter, chairman of the Office Management Committee, stated that of the many suggestions received for the attention of his committee, the following had been tentatively selected for study during the year:

Storing and Protection of Records.
Preparation of Manuals.
Use of Systems or Methods Departments.
Elimination of Clerical Waste.
Relation of Health to Efficiency in the Office.

Compendium Committee

Under the chairmanship of C. J. Fue, the Compendium Committee will continue its function of reviewing and summarizing the committee work undertaken by the Section and will this year consider issuing a supplement to bring the Compendium of 1934 up to date.

Editorial Committee

The activities of the Editorial Committee E. J. Tucker, chairman, will consist of securing articles on accounting topics for publication in the A. G. A. MONTHLY, and of reviewing convention reports of the various committees.

Luncheon Conferences Committee

To the Luncheon Conferences Committee, with E. N. Keller as chairman, was assigned the task of making necessary arrangement for holding group luncheon conferences at the annual convention.

Statistics Committee

The Statistics Committee this year has been revived as an active committee and it was thought that in addition to holding itself ready to assist when required by suggestion or conference the Statistical Department at Headquarters; the committee might well undertake such work as reviewing government requirements for statistics with a view to possible elimination of such data as were not advisable, and studying of questionnaires sent out by insurance companies, finance houses, etc. The definite program of the committee of which J. L. Conover has accepted the chairmanship, will be determined at its organization meeting.

The following members were present:

Managing Committee: F. L. Griffith, chairman, E. J. Tucker, vice-chairman, E. A. Berry, F. J. Bischoff, Jr., F. L. Blackburn, H. E. Cliff, H. C. Hasbrouck, J. W. Mackie, M. D. Read, L. A. Seyffert, Morris Tracy.

Advisory Committee: J. L. Conover, A. S. Corson, H. C. Davidson.

Committee Chairmen: W. N. Geiter, H. L. Gruehn, E. N. Keller, R. B. Milne, I. K. Peck, P. J. Sweenie.

Scott Succeeds Peck at Boston

WENDELL E. SCOTT, formerly head of the bookkeeping division of the Boston Consolidated Gas Company, has been appointed commercial manager, in charge of the cashier, bookkeeping, collection, investigation and application departments. He takes the place of Irving K. Peck, who recently resigned as assistant vice-president in charge of the commercial departments, to become president of the Binghamton Gas Works and allied companies at Binghamton, N. Y.

Mr. Scott rose through various positions with Boston Consolidated Gas from bill clerk. He is a graduate of the Albany Business College, the Pace and Pace School of Accounting and Boston University School of Business Administration.

George E. Curtis has been advanced to supervisor of the bookkeeping department and Everett R. Thompson, assistant to Mr. Scott. Charles Ingwall, formerly of the company's testing laboratory, has resigned to become assistant engineer at the Binghamton Gas Company, under President Peck.

The annual tax bill paid by American people is more than eight and a half billion dollars greater than their annual bill for fuel and light.

A Bonus Plan for Meter Readers

J. A. WILLIAMS
Niagara Hudson Power Corporation

One of the real problems which the operating departments have is the determination of a proper and equitable method of meter reader compensation. It has been given earnest, deliberate and thoughtful consideration but in many companies it is as great a problem today as it was twenty years ago.

The big consideration always has been to increase the efficiency of the meter reader, to effect necessary economies and at the same time to maintain or to improve relations with the consumer. The efficiency of the reader should not be increased to the point where it will jeopardize customer relations, nor should economies be instituted that will destroy the efficiency of the meter reader.

Experience after all is the best teacher. So a study was made of the experience of a number of other companies. Three common plans in use are as follows:

1. Straight salary,
2. Straight piece work,
3. Salary and bonus.

A straight salary, the most common one, is hardly satisfactory as it does not offer any inducement to meter readers to keep their skips or errors down, so some additional incentive is needed.

Objections to Piece Work Rate

A straight piece work rate has a number of objections. Frequently it is more difficult to read 250 meters in one part of a city than it is to read 500 meters in another part of the same city. Also it is not desirable to assign an indefinite number of meters to a meter reader so that he may read as many meters as he can in a day, as this interferes with billing, delivery, discount and collection schedules.

A salary and bonus plan seems to be the most adaptable. The salary remunerates the meter reader for his work on days when adverse conditions are encountered. The bonus keeps him interested in his records at all times. This is of great value in this operation, for a meter reader works in the field without much immediate supervision.

A successful bonus plan must be fair to the company and to the employees. The main requisites of such a plan are:

1. An accurate measure of the amount of work that an experienced worker may be expected to perform in a day.
2. A suitable reward for additional performance.
3. Equitable deductions for errors.

In order to devise a bonus plan for meter reading that meets these requirements, studies were made to determine the number of meters that should be placed in a meter reading book. The reading of 95% of the meters in a book is set as a meter reader's daily task. A bonus is paid for attainment of a higher percentage, with deductions from bonus for errors and omissions. Adjustments are made for exceptionally easy and exceptionally hard books.

Field studies were made with stop watches and pedometers of the reading of 14,388 meters in varying sections of five communities having a total of about 420,000 meters. Consideration was given to the following elements:

1. Walk to yard entrance,
2. Walk to house or apartment entrance,
3. Gain admittance to premises,
4. Walk to meter,
5. Read meter and enter index on sheet, make subtraction and enter difference on sheet, and then compare present month's consumption with previous month's consumption,
6. Walk to yard exit.

Element number 1 is directly proportional to the distance between premises. Element number 5 is practically constant.

TABLE 1
METER READING STANDARDS FOR WALKING ROUTES

Meters per Mile	*Meters Per Hour*	
	1 Utility	*2 Utility*
25	31	39
30	33	42
35	36	46
40	37	48
45	39	50
50	40	52
55	42	54
60	43	56
65	45	58
70	46	60
75	47	61
80	48	62
85	49	64
90	50	65
95	51	66
100	53	68
110	55	70
120	56	71
130	58	73
140	59	74
150	61	76
160	63	78
180	65	80
200	67	82
220	69	84
250	71	86
290	72	88
350	73	90
440	74	93
590	75	94
880	76	96

The other elements are variable for different premises and even variable for the same premises in different months. It was found that the time consumed by the four variable elements increases as the distance between premises increases.

Standards were set on the basis of number of meters per reading mile with the following allowances:

Walking time (Element 1) 3.2 miles per hour.

Reading time for one meter in a two utility book with 440 meters per mile (Elements 2-6 inc.) .6040 minutes.

Reading time for one meter in a single utility book with 250 meters per mile (Elements 2-6 inc.) .7717 minutes.

Allowances for reading were increased as the distances between premises increased. Table 1 shows the standards adopted.

Where cities are to be rerouted these standards are used as a basis for determining the number of meters that should be placed in a meter reading book. The actual walking distance is determined from a map with a map measuring instrument and the number of meters per mile is calculated. The meter readers work eight hours per day; with seven hours per day allowed for reading meters and for walking to and from assembly point to start of route, and the last hour of the day allowed for pick-ups. The standard number of meters per hour is multiplied by the reading time to determine the standard number of meters for a book.

For example:

Trial book	400	Meters
Reading distance	2.45	Miles
Meters per mile (400 ÷ 2.45)	163	Meters
Meters per mile (nearest figure on table 1)	160	Meters
Standard per hour (from table 1)	63	Meters
Distance from assembly point (or office) to start of route	.45	Miles
Reading time allowed	7	Hours
Time to start and return	.28	Hours
Net reading time	6.72	Hours
Standard number of book (6.72 x 63)	423	Meters

Approximately 95% of the standard number of meters are placed in a meter reading book, which gives allowance for growth. Where books are in areas that are liable to have a rapid growth, 90% or less of the standard number are used for a book. All books are reviewed by the meter reading foreman. Revisions are made for special territorial or reading conditions encountered in a particular book or area.

Contribution of Customers' Accounting Committee.

TABLE 2

DAILY BONUS

For Meter-Books Rated	96%	96.1	96.2	96.3	96.4	96.5	96.6	96.7	96.8	96.9	
	$ .20	.22	.24	.26	.28	.30	.32	.34	.36	.38	
	97%	97.1	97.2	97.3	97.4	97.5	97.6	97.7	97.8	97.9	
	$ .40	.42	.44	.46	.48	.50	.52	.54	.56	.58	
79 and less	98%	98.1	98.2	98.3	98.4	98.5	98.6	98.7	98.8	98.9	
	$ .60	.64	.68	.72	.76	.80	.84	.88	.92	.96	
	99%	99.1	99.2	99.3	99.4	99.5	99.6	99.7	99.8	99.9	100%
	$1.00	1.04	1.08	1.12	1.16	1.20	1.24	1.28	1.32	1.36	$1.40
	95%	95.1	95.2	95.3	95.4	95.5	95.6	95.7	95.8	95.9	
	$ .20	.22	.24	.26	.28	.30	.32	.34	.36	.38	
	96%	96.1	96.2	96.3	96.4	96.5	96.6	96.7	96.8	96.9	
	$ .40	.42	.44	.46	.48	.50	.52	.54	.56	.58	
80 to 97 (Inc.)	97%	97.1	97.2	97.3	97.4	97.5	97.6	97.7	97.8	97.9	
	$ .60	.62	.64	.66	.68	.70	.72	.74	.76	.78	
	98%	98.1	98.2	98.3	98.4	98.5	98.6	98.7	98.8	98.9	
	$ .80	.84	.88	.92	.96	1.00	1.04	1.08	1.12	1.16	
	99%	99.1	99.2	99.3	99.4	99.5	99.6	99.7	99.8	99.9	100%
	$1.20	1.24	1.28	1.32	1.36	1.40	1.44	1.48	1.52	1.56	$1.60
	94%	94.1	94.2	94.3	94.4	94.5	94.6	94.7	94.8	94.9	
	$ .20	.22	.24	.26	.28	.30	.32	.34	.36	.38	
	95%	95.1	95.2	95.3	95.4	95.5	95.6	95.7	95.8	95.9	
	$ .40	.42	.44	.46	.48	.50	.52	.54	.56	.58	
	96%	96.1	96.2	96.3	96.4	96.5	96.6	96.7	96.8	96.9	
98 to 109 (Inc.)	$ .60	.62	.64	.66	.68	.70	.72	.74	.76	.78	
	97%	97.1	97.2	97.3	97.4	97.5	97.6	97.7	97.8	97.9	
	$ .80	.82	.84	.86	.88	.90	.92	.94	.96	.98	
	98%	98.1	98.2	98.3	98.4	98.5	98.6	98.7	98.8	98.9	
	$1.00	1.04	1.08	1.12	1.16	1.20	1.24	1.28	1.32	1.36	
	99%	99.1	99.2	99.3	99.4	99.5	99.6	99.7	99.8	99.9	100%
	$1.40	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72	1.76	$1.80
	93%	93.1	93.2	93.3	93.4	93.5	93.6	93.7	93.8	93.9	
	$ .20	.22	.24	.26	.28	.30	.32	.34	.36	.38	
	94%	94.1	94.2	94.3	94.4	94.5	94.6	94.7	94.8	94.9	
	$ .40	.42	.44	.46	.48	.50	.52	.54	.56	.58	
	95%	95.1	95.2	95.3	95.4	95.5	95.6	95.7	95.8	95.9	
110 and over	$ .60	.62	.64	.66	.68	.70	.72	.74	.76	.78	
	96%	96.1	96.2	96.3	96.4	96.5	96.6	96.7	96.8	96.9	
	$ .80	.82	.84	.86	.88	.90	.92	.94	.96	.98	
	97%	97.1	97.2	97.3	97.4	97.5	97.6	97.7	97.8	97.9	
	$1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	
	98%	98.1	98.2	98.3	98.4	98.5	98.6	98.7	98.8	98.9	
	$1.20	1.24	1.28	1.32	1.36	1.40	1.44	1.48	1.52	1.56	
	99%	99.1	99.2	99.3	99.4	99.5	99.6	99.7	99.8	99.9	100%
	$1.60	1.64	1.68	1.72	1.76	1.80	1.84	1.88	1.92	1.96	$2.00

Italic figures are percentages of meters read. Other figures are amounts of daily bonus.

All meter reading routes are laid out on the "around the block" plan, so as to keep the meter reader in as small an area as possible. This facilitates reading the meters that were skipped on the first call.

In the larger cities definite assembly points are set for each reading district and the meter reading foreman delivers the books to the readers at the assembly point in the morning and picks them up at the same point at the end of the day.

Before the installation of the bonus plan in a city all of the meter books, whether rerouted according to new standards or not, are rated by dividing the actual number of meters in the book by the standard number. For example, if the actual number of meters were 415 and the standard number were 441 the rating of the meter book would be 94. Estimated ratings are assigned to automobile routes.

The rating assigned to a meter book indicates its standing compared with a meter book rated 100, which represents a good day's work by an experienced meter reader.

A bonus is paid to meter readers on the basis of the percentage of assigned meters read. The bonus is computed from table 2, which was designed to provide a bonus of approximately $5 per week for a meter reader who keeps his skipped meters under 2 per cent. This table is divided into four groups: one for books rated 79 and less, one for books rated 80 to 97 inclusive,

(Continued on page 79)

TABLE 3

METER READER'S BONUS RECORD

CORRECT_____ TOWN_____

APPROVED_____ METER READER_____ PERIOD ENDING March 15, 1935

Date	Meter Book No.	No. Meters	No. Inactive Not Read	No. Active	No. Skips	Meters Read	% Read	Meter Book Rating	Reading Bonus
1/16	1402	507	8	499	6	493	98.8	96	$ 1.12
2/17									
3/18									
4/19	1403	303	3	300	18	282	94.	97	—
5/20	1404	502	10	492	15	477	97.	94	.60
6/21	1405	607	3	604	6	598	99.	110	1.60
7/22	1406	482	1	481	4	477	99.2	96	1.28
8/23	1407	594	10	584	0	584	100.	111	2.00
9/24									
10/25									
11/26	1408	540	16	524	10	514	98.1	98	1.04
12/27	1409	455	5	450	20	430	95.6	95	.32
13/28	1410	399	11	388	6	382	98.5	92	1.00
14/29	1411	515	2	513	13	500	97.5	94	.70
15/30	1412	542	3	539	1	538	99.8	94	1.52
/31									
Totals		5446	72	5374	99	5275	98.2		$11.18

ADDITIONAL BONUS

Item	No.	Amount
Report Jumper		
Report Constant or Lost Meter		
Report Defective Meter		
Report Name of User	2	$ .20
Total		

DEDUCTIONS

Items	No.	Amount
Error	6	$ .30
Failure to O. K. Abnormal Reading	1	.05
Skip Meter Not Listed	1	.10
Total	10	$ .45

EARNINGS

Item	Amount
Base Pay	
Reading Bonus	$11.18
Additional Bonus	.20
Total	$11.38
Less Deductions	.45
Total Bonus	$10.93

Commercial Section

C. E. Bennett, Chairman J. W. West, Jr., Secretary F. M. Banks, Vice-Chairman

Southern Gas Convention and Sales Conference

THE annual meeting of the Southern Gas Association and the southwestern regional gas sales conference, which will be held jointly again this year, will take place at the Roosevelt Hotel, New Orleans, La., February 19-22. The regional sales conference, sponsored annually by the Commercial Section of the American Gas Association, has been arranged by a council under the chairmanship of C. B. Wilson, Little Rock Gas and Fuel Company, Little Rock, Arkansas. C. B. Gamble, Birmingham Gas Company, Birmingham, Alabama, is president of the Southern Gas Association.

The mornings of the first three days of the meeting will be devoted to the general sessions program and the afternoon meetings will be devoted to the sales conference program. A home service breakfast and program will be held Saturday morning, February 22.

In addition to the importance of the business sessions, this meeting should be of particular interest to those members of the gas industry who would like to visit New Orleans during the Mardi Gras season, as the season officially begins on February 21 and ends on Carnival Day, Tuesday, February 25. Reservations during the Carnival season should be made well in advance to be assured of adequate accommodations.

Following is the program for the joint meeting:

Wednesday, February 19

10:00 A.M.

Greetings from the American Gas Association—L. B. Denning, president, American Gas Association, Dallas, Texas.

President's Address—C. B. Gamble, president, Southern Gas Association, Birmingham, Ala.

Regional Activities—H. E. Meade, vice-president, Southern Gas Association, New Orleans, La.

2:00 P.M.

Economics of Long Term Appliance Financing—R. S. Murphy, Commercial Investment Trust, Inc., New York, N. Y.

Application of Gas to Air Conditioning—Carl Dean, Oklahoma Natural Gas Corp., Tulsa, Okla.

Meeting Electric Competition—Speaker to be announced.

Thursday, February 20

10:00 A.M.

Extending the Scope of Our Service—Charles Evans, Arkansas Power & Light Co., Little Rock, Ark.

Fire Hazards Due to Heating Plants—W. A. Hudson, Birmingham Gas Co., Birmingham, Ala.

Advertising Possibilities of Tying-in Hot Water with Other Products—Speaker to be announced.

2:00 P.M.

Selling Gas for Hot Water Service—Speaker to be announced.

National Automatic Gas Water Heater Sales Campaign—W. A. McIntyre, Peoples Gas Co., Port Arthur, Texas.

Gas Appliances—A Mutual Opportunity—John Moore, Colonial Home Furnishings Co., New Orleans, La.

National Gas Range Sales Contest—Speaker to be announced.

Promoting House Heating in All of Its Phases—Dean A. Strickland, United Gas System, Houston, Texas.

America's Public Health Enemy No. 1—Chester L. May, Community Natural Gas Co., Dallas, Texas.

Friday, February 21

10:00 A.M.

Looking Ahead in the Gas Industry—Floyd Parsons, Robbins Publishing Co., New York, N. Y.

"Mrs. Fastest Cook in the South"—*A breakfast cooking contest.*

2:00 P.M.

Dramatizing Merchandise Sales—R. C. Anderson, Memphis Power & Light Co., Memphis, Tenn.

Model Kitchen Promotion—R. O. Berry, Jacksonville Gas Co., Jacksonville, Fla.

Establishing Leadership for Gas Refrigeration in 1936—B. H. Gardner, Chairman, Refrigeration Committee, A.G.A., Columbus, Ohio.

Employee Sales and Prospect Development—C. H. Zachary, Southern Union Gas Co., Dallas, Texas.

Saturday, February 22

9:00 A.M.

HOME SERVICE BREAKFAST AND PROGRAM

Presiding: Albertine Berry, Lone Star Gas Company, Dallas, Texas.

Radio, One of the Branches of Home Service—Margaret Marable, Lone Star Gas Co., Dallas, Texas.

Home Service Records as Signposts to Sales—Mildred Clark, Oklahoma Natural Gas Co., Tulsa, Okla.

Special Lecture Demonstration Courses—Nell Read, San Antonio Public Service Co., San Antonio, Texas.

Home Service Functions in the A.G.A. Sales Campaigns—Jessie McQueen, American Gas Association, New York, N. Y.

Symposium on Home Service Aids in Southern Sales Plans—(Speakers to be announced).

Mid-West Regional Gas Sales Conference

THE mid-west regional gas sales conference, sponsored annually by the Commercial Section of the American Gas Association, which will take place at Hotel Sherman, Chicago, Illinois, February 13-15, is expected to play a conspicuous part in bringing new and better selling methods to the attention of companies in that area. A comprehensive program of sales topics has been arranged by the council under the chairmanship of H. J. Dropp, of the Milwaukee Gas Light Company. An added attraction is the home service session to be held Saturday morning, February 15, in conjunction with the sales conference.

Following is the complete program:

Thursday, February 13

10:00 A.M.

Opening Remarks—By the Chairman, H. J. Dropp, Milwaukee Gas Light Co., Milwaukee, Wis.

Keynote Address—Gael Sullivan, Associate Director of Federal Housing, Chicago, Ill.

Trends in Time Payment Selling—Delbert J. Duncan, Professor of Marketing and Management, School of Commerce, Northwestern University.

2:00 P.M.

Presiding—J. Frank Jones, Battle Creek Gas Co., Battle Creek, Mich.

The Key Campaign for Modern Gas Range Sales—C. A. Nash, Domestic Range Committee, A.G.A., Davenport, Iowa.

What the First Range Contest Accomplished for Two Companies—A. L. McKinstry, Cedar Rapids Gas Co., Cedar Rapids, Iowa.

Charles R. Henderson, Washtenaw Gas Co., Ann Arbor, Mich.

Friday, February 14

9:30 A.M.

Presiding: Newell E. Loomis, Detroit City Gas Co., Detroit, Mich.

Arousing a Slumbering Water Heater Market—R. J. Canniff, vice-chairman, Water Heating Committee, A.G.A., Pittsburgh, Pa.

Developments in Rental Purchase Plans—F. M. Rosenkrans, Gas Service Co., Kansas City, Mo.

H. S. Oyen, Central Illinois Electric & Gas Co., Rockford, Ill.

Straight Selling Plans—K. F. Dickinson, Public Service Co. of Indiana, Lafayette, Ind.

2:00 P.M.

Presiding: C. A. Nash, United Light & Power Co., Davenport, Iowa.

Establishing Leadership for Gas Refrigeration in 1936—B. H. Gardner, chairman, Refrigeration Committee, Columbus, Ohio.

Gas Refrigeration—Prizes and Profits for 1936—K. W. Browne, Milwaukee Gas Light Co., Milwaukee, Wis.

Mid-West House Heating Progress During 1935—Bernard T. Franck, American Light & Traction Co., Chicago, Ill.

Saturday, February 15

9:00 A.M.

HOME SERVICE SESSION

Presiding: Irene Hickey, Detroit City Gas Co., Detroit, Mich.

Home Service Curriculum in College—Dr. Louise Peet, Iowa State College, Ames, Iowa.

Operation of the Modern Gas Range—Dorothy Shank, American Stove Co., Cleveland, Ohio.

Gas Refrigeration—Jane Wagner, Electrolux Refrigerator Sales, Inc., New York, N. Y.

Home Service Aids in the Water Heater Campaign—R. J. Canniff, vice-chairman, Domestic Range Committee, A.G.A., Pittsburgh, Pa.

Eastern Natural Gas Sales Conference

AN excellent program with novel features to aid gas men in developing new sales has been arranged for the annual eastern natural gas regional sales conference which will be held in the William Penn Hotel, Pittsburgh, Pa., February 6-8.

The keynote address will be delivered by C. E. Bennett, chairman of the Commercial Section, under whose sponsorship the conference is held. George L. Scofield, Republic Light, Heat and Power Company, Buffalo, N. Y., is chairman of the council and will conduct the opening session. Saturday morning, February 8, will be devoted to a home service session with Hulda Ungericht, The Ohio Fuel Gas Company, Columbus, presiding.

Following the keynote address by Mr. Bennett, a paper on "What's Ahead for Gas Water Heating," will be presented by Charles L. Yost, United American Bosch Corp., Pittsburgh. A feature of this session will be an address by Herman Russell, chairman of the National Advertising Committee, on "The Need of Prospects for National Advertising." The afternoon session will consist of discussions of the A.G.A. national sales contests which are now being launched in an intensive effort to sell gas ranges, water heaters and refrigerators.

The second session opens with a paper on "Home Insulation" by J. H. McKay, Johns-Manville Corp., New York. This will be followed by a discussion of the possibilities of winter air conditioning by George Boeddener, Fox Furnace Co., Elyria, Ohio. The morning session will conclude with an address on "Commercial and Industrial Heating" by George Mandel, Surface Combustion Corp., Toledo.

Space heating sales will be the major topic of the Friday afternoon session at which H. B. Yost, Paul Dunn, J. G. Werner, and Frank D. Howell will discuss their experiences in that field. The remaining subject on the program for the session is "Importance of Gas Refrigeration Sales to Natural Gas Companies," by E. M. Tharp, Columbus Gas and Fuel Company.

In addition to a group discussion of home service activities, the home service session will be addressed by Beatrice Cole Wagner, chairman of the Home Service Committee; K. M. Clark, Ruud Manufacturing Company, and Daisy Davis, Ohio State University, Columbus.

Employee Plan Holds Key to New Load

By JOHN H. BRAINE*

The Brooklyn Union Gas Co.
Brooklyn, N. Y.

ENCOURAGEMENT for the task that faces each one of us this year, in increasing gas sales, is given by the results of the Employee Sales Plan during 1935. Greater success was achieved last year than in either of the two previous years.

Evidence of this success is provided in the report of the results of the Employee Sales Plan for 1935, showing that employees filed 7,101 leads, exclusive of those returned because of prior protection and those not yet reported on by salesmen.

During the year, 1,655 productive leads were recorded and 1,889 appliances sold. Both these are record figures, showing considerable improvement over 1933 and 1934. In 1933 there were 1,385 productive leads recorded and 1,515 appliances sold. During 1934 there were 1,287 productive leads recorded and 1,443 appliances sold.

The percentage of productivity also was higher last year. The figures for this classification, which is the relation between leads filed and productive leads, for the last three years are 23 per cent for 1935, 19 per cent for 1934 and 17 per cent for 1933.

Another classification in which the Employee Sales Plan showed more successful results is the percentage of productive leads to number of employees. The figures for this classification during the past three years are 37 per cent for 1935, 29 per cent for 1934 and 32 per cent for 1933.

At this point it is important to call attention to the fact that five groups were in the 100 per cent class in 1935 while only one group made this class during each of the two previous years. This honor group is composed of the divisions or departments which record one productive lead for each employee.

Williamsburgh branch has succeeded in attaining this goal in each of the three years in which the Employee Sales Plan has been in effect. In 1933 it had 1.28 productive leads for each employee, in 1934 it recorded 1.07 and in 1935 it reached its high mark of 1.43. This is a splendid achievement for which the Williamsburgh employees deserve commendation.

While Williamsburgh reached its highest total in 1935, it did not succeed in having the highest number of productive leads per employee. That honor went to the Treasury Department whose employees recorded 1.86 productive leads per employee.

During each of the two previous years the Treasury employees displayed praiseworthy efforts in their attempt to reach the 100 per cent class, but in each case fell just short. In 1933 Treasury had .75 productive lead per employee, finishing third among the various company groups. In 1934 it raised its mark to .88, winding up behind Williamburgh branch in second place. Its 1935 record provides a goal at which all other groups may aim in the future.

The other three groups which had more than one productive lead per employee were Nassau Branch, with 1.2; Brooklyn Branch, with 1.05, and Metropolitan Branch, with 1.04.

Improvement in productive leads per employee was shown throughout the company in 1935. Of the 33 groups listed in the Employee Sales Plan report 22 of them showed increases in this respect in 1935, five recorded no change and six dropped behind 1934. Combined they enabled the employee body as a whole to attain a productivity per employee figure of 37 per cent which is roughly about two productive leads for each five employees.

While each of the groups that showed improvement in 1935 deserves praise, special notice should be taken of the activities of the employees in the various manufacturing plants throughout the company. Of the five works, four showed a greater number of productive leads per employee in 1935 than in 1934. This augurs well for 1936 when the cooperation of all employees in the task of increasing gas sales will be so essential.

* Chairman, Employee Sales Promotion Committee.

Industrial Gas Section

Charles W. Gale, Chairman Eugene D. Milener, Secretary Ralph L. Manier, Vice-Chairman

Industrial Gas Trade Paper Advertising To Continue through 1936

By J. P. LEINROTH

Chairman, Advertising Committee, Industrial Gas Section

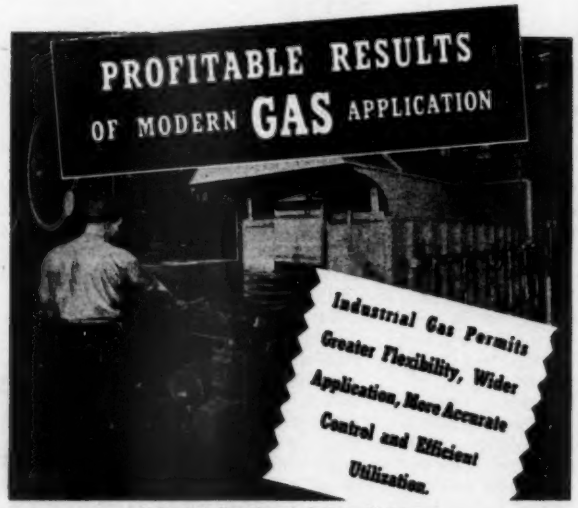
AGAIN in 1936, industry is being told that "The Trend Today Is to GAS—the Modern Industrial Fuel." Those members of the Association who read the trade papers that serve our larger industries, have become familiar with that slogan and the attractive cut in which it is displayed. That was the slogan that attracted attention to the advertisements that were placed in leading trade papers during 1935 and which did much to keep gas service before industrial plants in all sections of the country.

This year under the auspices of the Advertising Committee of the Industrial Gas Section, the industrial gas advertising campaign is being continued and the use of the slogan "The Trend Today Is to GAS—the Modern Industrial Fuel" which is getting to be well known in industrial circles is being continued.

Last year's advertising campaign, members will recall, was built almost entirely on the industrial research and development work of the industry, particularly that sponsored by the Committee on Industrial Gas Research. As a result, gas and gas equipment were placed in the position of being considered up-to-date and capable of being applied in a correct manner technically and with greater economy in line with the increasingly severe requirements of modern manufacturing plants. As a result of inquiries received from this advertising campaign, several thousands of copies of technical research bulletins were placed in the hands of technicians and plant executives.

During 1936 while the research theme will not be dropped, emphasis will be shifted to the beneficial results to heat using industries which have followed the biggest cooperative research push the gas industry has ever undertaken. Industry is being told that "New Processes, New Developments, New Equipment, All Point the Way to New Profits" for plants that take full advantage of the new ways in which gas can now be applied.

The metal treating industries and the wholesale baking industry are being particularly appealed to in these advertise-



Continuous gas-fired forging furnace for shaping automobile brake drums

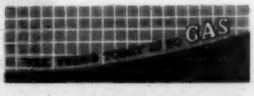
"Saving 55% of former costs; quality improved" . . . "Shorter heating time—Control more accurate" . . . "Production increased 8%, fuel costs reduced 35%" . . . "Better metallurgical qualities—and greater fuel efficiencies."

●These are a few of the typical, authentic statements revealed by the records of various manufacturers who have availed themselves of new knowledge about gas utilization. Most of these manufacturers have always used gas, but found it profitable to modernize certain heating operations with up-to-date furnace equipment.

●In recent years the advancement in the science of burning gas has revealed much new knowledge in the application and utilization of this modern fuel. Much modern equipment has been developed and new processes evolved, making gas more practical, flexible, efficient, and economical than ever before.

●Why not take advantage of this new knowledge—and of these new advancements? Call your Gas Company Industrial Engineer today. Without obligation he will gladly review your heat treating operations, and suggest the new or improved methods or processes that will mean *profits* to you.

INDUSTRIAL GAS SECTION
AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE—NEW YORK CITY



Uniformity of product both as to quality and appearance is always assured when you bake with gas. You get this sales building uniformity because gas provides an even distribution of heat that bakes uniformly throughout the oven.

● Gas has many other advantages for the baker, too. It is clean, economical to use, easily regulated, instantly available, and quick heating. It also eliminates fuel storage and handling cost, gives more working space, and cuts labor costs.

● In addition to these natural advantages of gas as a baking fuel, recent research has developed new knowledge which points the way to still greater efficiencies and still lower costs.

● Why not investigate gas for *your* plant? See your local gas company industrial engineer for an analysis of cost cutting opportunities in your plant, either by installing new equipment or by redesigning and modernizing your present equipment.

IMPORTANT!

A copy of an American Gas Association Research Report, "The Application of Heat to Bread Baking" can be obtained free from your local gas company, or direct from American Gas Association. Write for it!

INDUSTRIAL GAS SECTION
AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE—NEW YORK CITY

Current advertisements sponsored by the Industrial Gas Section

ments. While four magazines were used last year, six will carry the industrial gas story from January to September this year. These are: Iron Age, Steel, Metal Progress, Metals & Alloys, Bakers' Weekly and Bakers' Helper.

The detailed schedule of appearances is as follows:

METAL PROGRESS—January 1, February 1, March 1, April 1, May 1, July 1, September 1.

IRON AGE—January 9, February 6, March 5, April 9, May 7, June 4, August 20, September 3.

METALS & ALLOYS—January 10, February 10, March 10, April 10, June 10, August 10, September 10.

STEEL—January 27, February 24, March 23, April 20, May 25, June 22, July 20, September 21.

BAKERS' HELPER—January 11, February 8, March 7, April 4, May 2, June 13, September 5.

BAKERS' WEEKLY—January 25, February 22, March 21, April 18, May 23, July 11, September 26.

It will be noted that appearances of the advertisements are staggered so that the gas industry is represented in some publication nearly every week from January to September.

The Advertising Committee believes that gas companies will find it to their advantage to cooperate aggressively with the industry's trade paper advertising by tying in their local industrial gas advertising with it.

The trade paper advertising of the Industrial Gas Section is being prepared and presented by Ketchum, MacLeod & Grove, Inc. of Pittsburgh, under the supervision of the Section's Advertising Committee, J. P. Leinroth, chairman, F. B. Jones, vice-chairman.

Industrial Gas Conference in Detroit

AN industrial gas sales conference will be held in Detroit, Michigan, March 10-11, under the auspices of the Industrial Gas Section of the American Gas Association. Present plans for the conference include papers and discussions not only on how to sell industrial gas but also on the latest developments in providing new equipment for this market.

A high light of the conference is expected to be a full day of inspection of industrial gas plant installations in a city which is acknowledged to be the most advanced and progressive in the application of industrial heating processes and equipment in this country. An unusual opportunity will be afforded to see the use of gas in the automobile industry. Many executives, sales managers and industrial gas engineers are expected to be in attendance.

The Managing Committee of the Industrial Gas Section will meet the first day of the conference.

News OF INDUSTRIAL GAS PUBLICITY

One of the activities of the Publicity Committee of the Industrial Gas Section is to prepare illustrated technical and news articles for the trade press so that the several heat using industries can be kept informed of successful, unique and profitable applications of gas in American mills and factories. Most of these articles are prepared by the Section's staff writer, J. B. Nealey, who regularly visits different industrial centers and secures material by personal plant inspections and interviews with the operating personnel. Many of the country's leading trade papers feature these articles which average three pages in length. Over a hundred articles appear each year and the aggregate circulation covers a large percentage of the men responsible for the production methods used in factories from coast to coast.

Henry Obermeyer is chairman and H. O. Andrew and George H. Finley are vice-chairmen of the Publicity Committee of the Industrial Gas Section.

A DESCRIPTION of how fifty forging furnaces were changed from electricity to gas in the Ford Motor Company's plant at Dearborn, Michigan, is featured in an article entitled "Forging Furnaces at the Ford Plant" which appeared in the December issue of *Metals & Alloys*, a widely read metallurgical magazine. In spite of the fact that the power used to supply the electric forges was generated on the premises and represented excess over that needed for normal plant operations, the change to gas represents a decided saving over the electrical method.

This saving is due partly to eliminating the high maintenance costs of heating elements in the electric forges, but chiefly to the economy of specially designed slot-type gas forges which are now being used as standard equipment. These forges consume an average of only 3½ cubic feet of 550 B.t.u. gas per pound of steel, which is heated to 2200° F.

✣

LEADING trade magazines in the metals field, including *The Iron Age* in its December 5 issue and *Industrial Finishing* in its December Issue and *Industrial Heating*, December issue, recently carried a story on japanning procedure as carried on at the Detroit plant of Graham Paige Motors Company. This story told about eliminating the customary "burn-off" ovens by using gas torches to sweep with flame the fenders and other parts that need drying after having passed through the washing and preliminary drying apparatus. This drying precedes baking in japan ovens. Japanning is a method of baking enamel on metal parts that will be subjected to unusually severe wear. Continuous japan ovens in this plant that formerly burned oil are now heated with gas at considerable economy in operation and maintenance costs.

Three hours less time is required to bring the ovens up to temperature in the morning with gas than was required when oil was used. The ovens are now lighted each morning at the same time production starts, and are up to temperature when the first work is ready to enter.

An interesting part of this article deals with the use of filtered air for burning the gas. The use of filtered air is made necessary by very exacting specifications that not even the slightest dust particles are permissible on the japanned surfaces. The finest surface finishes are secured with direct contact of the gas products of combustion and the enamel.

✣

AN article descriptive of forge furnaces in a railroad shop which were converted from oil to gas firing with considerable saving in operating costs was published in *Railway Mechanical Engineer*, August issue, and *Industrial Gas*, November issue. This was published under the title "Fuel Utilization in the Maintenance of Railway Locomotives."

Among other types of forgings heated in these gas forges are some weighing over 1200 lbs. each that are forged from solid steel billets. The cost of operating each of these forges was reduced from 69¢ an hour to 52¢ when natural gas replaced oil. On top of this saving is an additional one due to reducing from 60 to 40 minutes with gas the period required for large forgings to equalize the temperature throughout their body, known as the soaking period.

✣

THE most effective means of transferring heat from burning gas to large tanks of molten glass is through radiation from the flame itself. Modern practice in glass plants calls for using luminous gas flames which have high heat radiating capacity. These flames are extended in length beyond that possible with ordinary combustion by diluting the gas and air stream with inert products of combustion. This has the effect of delaying or prolonging combustion from the tip of the burner, and provides a long luminous flame which distributes the radiant heat over the entire surface of the glass.

An interesting description of how luminous gas flames are used to advantage in glass plants is contained in an article published under the heading "Controlled Luminous Gas Flame in Glass Melting." This can be referred to in the November issue of *Ceramic Industry*, September 9 issue of *Steel* and the September 1 issue of *Heat Treating & Forging*.

Navy to Use Gas in Shops

AFTER making a careful study of all factors involved, officials at the Brooklyn Navy Yard have specified gas as the only fuel to be used in two of the new shops now being erected. All equipment to be installed in the shops will be designed to use gas exclusively where heating is required.

Technical Section

F. A. Lydecker, Chairman H. W. Hartman, Secretary Martin I. Mix, Vice-Chairman

"Exploroscope"—For the Interior Inspection of Gas Mains

W. M. HENDERSON

Superintendent Gas Distribution
Los Angeles Gas and Electric Corporation

General view. Note lamp globe at bottom

THIS instrument will satisfy a general curiosity to see the interior of a pipe line while the line is in operating service. The instrument has sufficient utility to enable the operator to secure a photograph or considerable area of the exposed interior. As a new tool for the gas man, it has novelty and utility with simplicity in application.

This instrument was conceived and created in the course of a fact-finding study of the phenomenon of dust, its cause, effect and elimination. The two engineers engaged in the problem of dust recognized the desirability for a means to observe the pipe interior, so they proceeded to design and construct the "Exploroscope." If any value comes to others through use of the device, then their appreciation and blessings may be bestowed on T. G. Wallace and R. G. Holman of the Los Angeles Gas and Electric Corporation's research engineering staff who designed and built the apparatus here described.

The essential features of the instrument are that it can be inserted into a gas main under pressure by means of a gate valve and packing gland; it provides its own source of illumination within the pipe interior; it permits ocular inspection of the inside pipe walls entirely around the periphery of the pipe; permits photographs in more detail than is disclosed to the eye, and by longer exposures a photograph can be taken of interior sections that are actually too far to be seen with the eye.

The accompanying photographs illustrate the instrument and some of the results obtained with interior photography. The Exploroscope is now only in its development stage; by use and experiments its scope will develop. A description of the instrument now in use may be of value to others who are interested in exploring the interior of gas pipes while they remain in service.

Camera attachment

The Exploroscope proper consists of three optical units: the standard interchangeable microscope eyepiece (1), the inverting lens (2), and the objective lens (3). Each being a combination of two achromatic lenses. The eyepiece slips into its barrel mounting (4), which screws into brass sleeve (5) forming a telescoping unit for focusing.

The lock screw (6) bears against a tongue or fiber tube (7). By releasing the lock, the eyepiece and its mounting can telescope, thus changing the distance between the eyepiece and the inverting lens for focusing.

The fiber tube (7) is pinned to knurled adjusting nut (8). The inverting lens (2) in its brass mounting (9) screws on to the fiber tube (7).

Fiber tube (10) through brass bushing (11), screws into brass lens mounting (9).

Objective lens (3) in brass cap (12) screws on to brass mounting (13) which screws to fiber tube (10). A small threaded brass bushing (14) is pinned to fiber tube (10).

When knurled nut (8) is turned, fiber tube (7), inverting lens (2), and its mounting (9), fiber tube (10), the objective lens (3), and its mounting (13) all screw as a complete unit along threads on bushing (14) and brass tube (15). These threads hold the entire unit against the force of pressure.

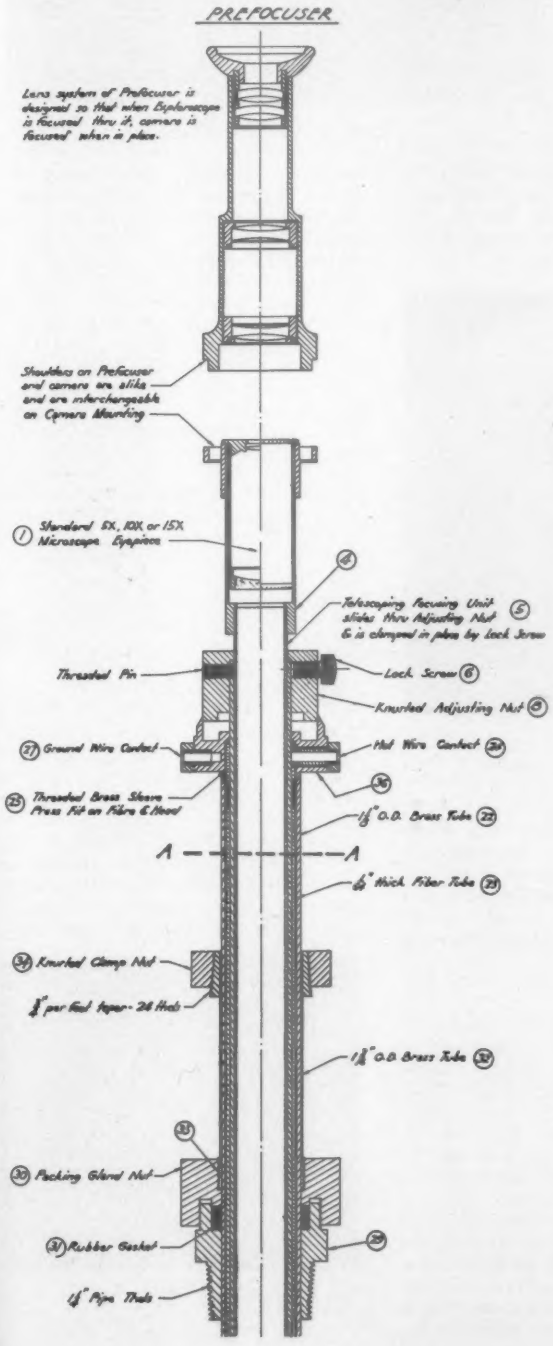
The bottom of the fiber tube (10) bears a rack (16) and its extension. It slides through its guide sleeve (17) as the fiber tube moves longitudinally due to the rotation of the knurled nut (8). The movement of the rack (16) causes a rotation around bearing (18) of gear (19) to which is fastened the lamp and its socket, by means of the hanger (20). There are two such hangers and bearings,

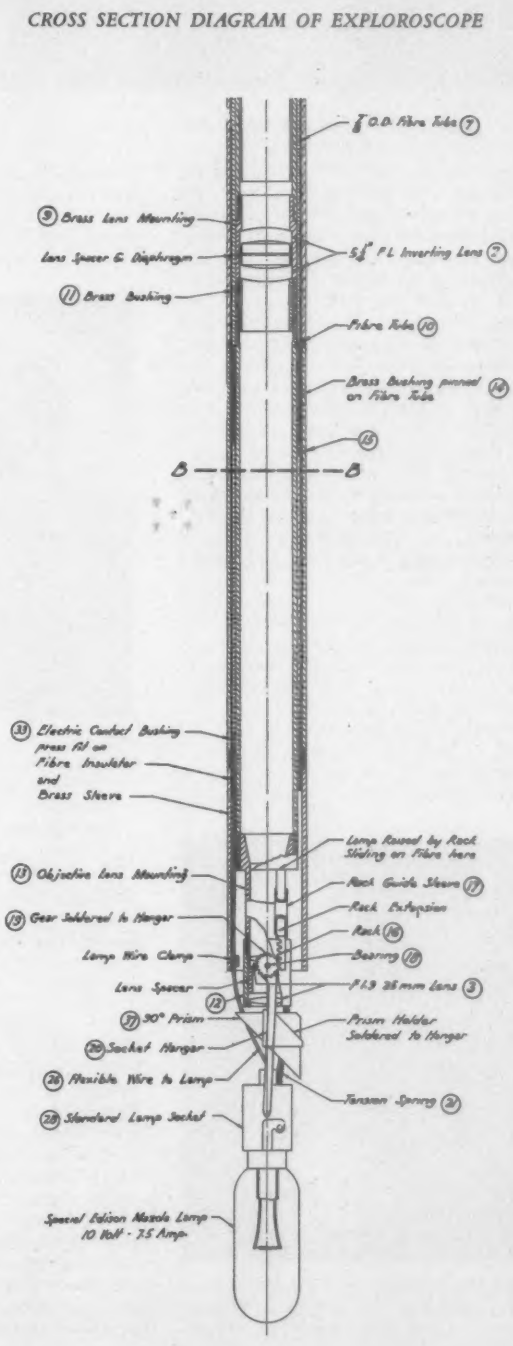
Method of insertion through gate valve

and the prism is mounted between them. Light enters the prism through the outer small face, is reflected internally at the hypothenuse, through the upper face into the objective lens. By turning the knurled nut (8), the prism is tilted so that one can traverse a pipe some distance from the Exploroscope. Further turning swings the prism and the lamp to a horizontal position, and the immediate bottom comes into view. When turning the nut (8) counterclockwise, the lens unit is raised and the tension spring (21) returns the prism and lamp to a vertical position.

The brass tube (15) is pressed into brass tube (22), separated electrically by a thin fiber tube (23). This unit of three tubes forms the positive and negative conductors for the lamp; the outer, being the ground. The "hot" wire plugs into its contact at (24) and screws into brass sleeve (25), an extension of (15), through which the current travels downward to contact bushing (33) and flexible wire (26) to the lamp. The ground wire connects to the head at (27), to outer tube (22), through both rack and bearings to the hangers and outer socket case (28).

The packing gland assembly (29)


PREFOCUSER
Lens system of Prefocuser is designed so that when Exploroscope is focused thru it, camera is focused when in place.
Shoulders on Prefocuser and camera are alike and are interchangeable on Camera Mounting
(1) Standard 5X, 10X or 15X Microscope Eyepiece
(4)
Telescoping Focusing Unit slides thru Adjusting Nut (5) & is clamped in place by Lock Screw
Threaded Pin
Lock Screw (6)
Knurled Adjusting Nut (8)
(27) Ground Wire Contact
Hot Wire Contact (24)
(25) Threaded Brass Sleeve Press Fit on Fibre & Hood
(36)
1⅛" O.D. Brass Tube (22)
A — A
⅛" Thick Fiber Tube (23)
(34) Knurled Clamp Nut
⅛" per foot taper - 24 Thds
1⅛" O.D. Brass Tube (32)
(35)
(30) Packing Gland Nut
(31) Rubber Gasket
(29)
1⅛" Pipe Thds


CROSS SECTION DIAGRAM OF EXPLOROSCOPE
⅞ O.D. Fibre Tube (7)
(9) Brass Lens Mounting
Lens Spacer & Diaphragm
5⅛" F.L. Inverting Lens (2)
(11) Brass Bushing
Fibre Tube (10)
Brass Bushing pinned on Fibre Tube (14)
(15)
B — B
(33) Electric Contact Bushing press fit on Fibre Insulator and Brass Sleeve
Lamp Raised by Rack Sliding on Fibre here
(13) Objective Lens Mounting
Rack Guide Sleeve (17)
(19) Gear Soldered to Hanger
Rack Extension
Rack (16)
Lamp Wire Clamp
Bearing (18)
Lens Spacer
F:3.5 25 mm Lens (3)
(12)
(37) 90° Prism
Prism Holder Soldered to Hanger
(28) Socket Hanger
(26) Flexible Wire to Lamp
Tension Spring (21)
(38) Standard Lamp Socket
Special Edison Mazda Lamp 10 Volt - 3.5 Amp.

Carrying case—open

Carrying case and lead wires

screws into an 1¼" valve fastened to the gas main. The packing gland nut (30) forces the rubber gasket (31) against the brass tube (22) so that when the instrument is inserted through the valve and the packing gland nut is tightened by hand, it will not leak gas at 60 lbs. Since, in removal, the instrument must be drawn out high enough for the lamp to clear the valve body in closing, the bottom of brass tube (22) leaves the rubber gasket (31) and rises into the brass tube (32) where it is locked in place by the clamp nut (34). Upon inserting the instrument, the packing gland nut (30) is relieved and the gland is slid downward till the lamp is entirely within the 1¼" threaded portion. Then the knurled clamp nut (34) is tightened and the instrument screwed into the gate valve or its bushing. The valve is then opened, knurled nut (34) relieved and the instrument inserted against the pressure. At any desirable depth, the packing nut (30) is tightened by hand and clamp nut (34) also, as an added precaution. To rotate the entire instrument, packing nut (30) is relieved and brass tube (32) turns in the fine threads of nut (30), at (35). Packing nut (30) can then be clamped in place to prevent leakage of gas. In removal, when both clamps must be loosened and pressure opposed, the chain from (36) to (30) prevents blowing out of the instrument.

Pipe interior photograph. Side-wall of 16" pipe, near bottom. Shows scale on 3" circle of pipe surface

Pipe interior photograph. Side-wall of 16" pipe, near bottom. Shows scale on 3" circle of pipe surface

The objective lens has a focal length of 25 mm. or one inch. Since the field of vision depends upon the distance of the image to the lens and the size of the image, and the latter is restricted to ½" diameter, it is desirable to have the focal length as small as possible. This gives the apparatus its wide angle of almost 25 degrees.

It is imperative to have an objective of short focal length because the displacement of its image is small for large changes in distance of the object. The Exploroscope shows—in photograph No. 8—a section of pipe two feet away, as well as seven feet away; both are in focus. This condition is highly desirable.

The image formed by the objective lens (3) must be cast upon the focal plane of the eyepiece (1), which is, in most cases, between its own lenses. Since the objective lens is in the main pipe and the eyepiece is above the gate valve, some means of transferring the image to the eyepiece is necessary. The inverting lens (2) is chosen for this purpose, transferring the image from (3) to the focal plane on (1). In this transfer, the image is inverted and slightly increased so that it occupies the entire field of the eyepiece. One inversion occurs through the prism (37), reinverted through the objective (3) and inverted again at (2), so that when one looks through the eyepiece with the object ahead of him, away from the observer is the bottom of the pipe, and towards the observer is the top. In looking along the bottom of the pipe, the part close to the lens is always more high illuminated than the part farther away. In all our perspective photographs, the direction of the rays can be determined by drawing a line from the light to the dark section.

The small lamp used is the most powerful type of its size obtainable, a special Mazda 10 v. 7½ amp., having a life of 50 hours. Electricity is derived from 6 v. storage batteries, adjusting the current to 7½ amperes by adding or eliminating cells in series. The current is measured by means of an ammeter housed inside the Exploroscope carrying case, and if the lamp burns out, a loose connection occurs, or if for any other reason the current drops below 6½ amperes, a relay operates a buzzer, calling the attention of the operator that investigation is necessary. This is very important in long exposures where constant attention would

Pipe interior photograph. Looking along bottom of 24" pipe for distance of approximately 7 feet

otherwise be required. The ammeter, relay, buzzer, and 3 v. dry cell, and master switch are conveniently housed in the case.

When the Exploroscope is focused down a pipe and the distance from the bottom of eyepiece barrel (4) to the top of nut (8) is measured, reference to a chart on the inside cover of the carrying case shows directly the distance of the object, and the size of the field.

The prefocuser is used for focusing the Exploroscope when photographs are to be taken. The camera used is a "K" type, miscroscopic, lensless camera. When the Exploroscope is used for ocular investigation, all rays leaving the eyepiece are focused to infinity. They are, of course, intercepted by the eye, but this has no bearing upon the system other than the nearsightedness or farsightedness of the operator, in which case an additional correction may be necessary. With the camera in place, the above rays must come to a focus at the surface of the film which is approximately 10½" from the eyepiece. Since the rays diverge from the eyepiece covering a 3¼"x 4¼" film, the intensity of light is greatly diminished, and the camera cannot be focused on a ground glass instead of on the film. The prefocuser is an optical system of four achromatic lenses, so designed that when it is placed upon the eyepiece of the Exploroscope and the entire instrument focused through it, the rays leaving the Exploroscope eyepiece are focused 10½" from it, so that when the prefocuser is replaced by the camera, the rays come to a focus on the film. With the prefocuser in place, all of the light leaving the eyepiece of the Exploroscope enters the eye through the prefocuser, so that its intensity is very much greater than that which falls upon the film. Usually the intensity is so low that an exposure of thirty minutes or more is necessary on super-sensitive panchromatic film.

It is the opinion of the designers that now, after a year's experience with the present instrument, they are satisfied that an instrument of this type can be made very much smaller and simpler in design than the existing one, increasing the efficiency and enlarging the field. This new design would use two prisms, instead of one, for a complete traverse of the pipe circumference. By means of different type lenses, it would be possible to see farther down the pipe with the instrument than with the unaided eye. By the use of longer exposures, photographs could be taken of sections farther down the pipe than can be seen through the apparatus. By having the lamp outside the main, a more powerful light can be utilized and its beam concentrated upon the object under observation.

There is more to be done in the development of this instrument; the success so far is sufficient encouragement to warrant further effort.

C. A. Harrison Goes to Toledo

CHARLES A. HARRISON, member of the Advisory Council and last year's chairman of the Technical Section, has been transferred from New York to become assistant general manager of the Toledo Edison Company, Toledo, Ohio. For a number of years, Mr. Harrison has been connected with the Cities Service Company in a gas engineering capacity. Prior to his transfer to New York, he had been affiliated with the Public Service Company of Colorado, Denver.

J. A. Strozier has assumed Mr. Harrison's former duties in the valuation and rate department of Cities Service. Other duties in connection with the operation of gas properties have been taken over by J. R. Wohrley.

A Distinguished Visitor from the Antipodes

A RECENT letter from Gerald M. O'Dea, a member of the American Gas Association, general manager and secretary of the South Australian Gas Company, advising Headquarters of an impending visit from one of the directors of that company, Sir Wallace Bruce, was followed a few days later by Sir Wallace himself.

We found him to be a representative citizen of the great Commonwealth from "down under" which has honored us with many visitors, energetic, with wide interests and possessed of a most inquiring mind. Incidentally we discovered that Sir Wallace has found time to be Lord Mayor of the City of Adelaide, chairman of the South Australian Harbors Board, chairman of directors of The Adelaide Cement Company, a director of General Motors—Holdens, Ltd. and otherwise prominently associated with many other businesses and commissions for both the state and federal governments.

Problems of the gas industry were discussed at a luncheon at the Engineers' Club in this city at which the following were present:

S. J. Beale, J. S. DeHart, Jr., Oscar H. Fogg, Donald McDonald, Clifford E. Paige, Floyd W. Parsons, H. Leigh Whitelaw, Percy S. Young, and Alexander Forward.

In addition, Sir Wallace, at a group interview of Headquarters specialists, propounded a number of questions bearing on practically all phases of the gas industry from production through to utilization, rate making and advertising.

Sir Wallace's visit to the United States has necessarily been very short, as he is on the way to Europe; in behalf of our members and the industry at large we were pleased to have this opportunity of welcoming this distinguished visitor from the Australian gas industry to these shores.

Gas Featured in Book on Business Practice

THERE has just been published in Toronto, Ontario, an unusually informative book entitled "Essentials of Business Practice." In this treatise the authors, L. S. Beattie and W. G. Bennett of the Ontario Department of Education, have presented in condensed form for the use of High School students, a wide range of business information which conforms to the best standards of Canadian business practice.

An entire chapter is devoted to the Gas Utility as it serves the home. Another chapter deals with electricity in the home.

After briefly describing the history of gas from the time of its early uses in England, the present day sources of gas are explained as are the methods of storing it and bringing it to appliances in the home. An aerial picture of a modern gas works is used to illustrate this portion of the chapter.

In order to help the student understand the "mysteries" of the gas meter and the gas bill, a meter dial is shown and how readings are taken is explained. A gas bill is shown and an analysis of it is made.

The authors have condensed an unusually large amount of elementary business material extending from handling one's personal bank account to buying and furnishing a home. They have presented twenty-five items of information concerning gas and the gas industry in twenty-five single line sentences. These cover statistics of the Canadian gas industry and points on how to use gas economically, and are followed by oral questions and written problems the majority of which can only with difficulty be answered without reference to the text.

"Essentials of Business Practice" looks at business from the viewpoint of the individual and the family, and covers in a practical way most of the affairs of business which affect individual economy and thrift. Business ethics as the base of success in handling the business affairs of the home concludes the volume.

A copy of this book has been presented to the Association Headquarters' Library by Arthur Hewitt, president and general manager of The Consumers Gas Company of Toronto.

—E. D. M.

Wins McCarter Medal

GILES B. SYKES, employee of the Consolidated Gas Company of New York, was presented with a McCarter medal for life saving by Charles W. Gardner, safety director of the company, at a safety meeting in December. The meeting was attended by 85 employees.

Testing Laboratory

R. M. Conner, Director — Managing Committee: J. S. DeHart, Jr., Chairman — N. T. Sellman, Secretary

Accelerated Testing Activity Noted at Laboratories

AN unusually large volume of certification and test work conducted during December and January at both the Cleveland Testing Laboratories and the Pacific Coast Branch Laboratories of the American Gas Association reflects definite optimism on the part of manufacturers of gas appliances and appliance accessories and gives tangible proof of recent accelerated activity in developing new models and designs of equipment. From all indications it seems that this increased interest on the part of gas-consuming equipment manufacturers in obtaining American Gas Association certification of products will continue well into the spring months.

The testing of gas appliance accessories for official listing by the Association, a newly launched activity of the past year and one-half, reached a peak in December, during which month it was responsible for 25 per cent of the testing revenue of the Cleveland Laboratories. Already 188 models of 5 types of gas appliance accessories produced by 22 manufacturers appear in the American Gas Association Directory of Approved Gas Appliances and Listed Accessories. These items include gas conversion burners, gas burner valves, relief valves, automatic shut-off valves and pressure regulators. Numerous thermostats, thermostatic pilots and automatic main gas-control valves are awaiting test.

Reasons for Improvement

Other than to general improvements in business conditions, this acceleration of the accessory testing and listing program may be ascribed to: (1) New sets of American Standard listing requirements covering such devices which became effective January 1, 1936, and (2) clauses in certain approval requirements for complete gas-burning appliances recently requiring listed burner valves on ranges, relief valves on storage water heaters, and regulators on central heating gas appliances or their equivalent, irrespective of the date of approval of the appliances.

The noticeable pick-up in the appliance testing and approval program may be charged to several factors. Most important perhaps is the trend among manufacturers to produce improved models more frequently in order to make available to the public new designs and attractive modern decoration as speedily as possible. This trend is particularly apparent in the gas range field.

Another major factor stimulating boiler, furnace, and water heater test work is the enforcement of the American Gas Association's new 5-year approval policy, which requires that all appliances approved prior to January 1, 1931, be resubmitted for test this year if approval is to be extended. In the typically "basement" appliance lines noted above many currently merchandised models were approved before 1931. In addition, certain types of gas appliances such as gas hair dryers and refrigerators, for which approval standards have not long existed, are beginning to be submitted for testing. Finally, an augmented interest in approvals for appliances designed to burn bottled gas supplies, such as propane, is being evidenced. Major liquefied petroleum gas interests now require American Gas Association approval for appliances consuming their products.

Relief Valves Mandatory on Water Heaters

AS the result of long planning and official action by committees of the American Gas Association, all storage water heaters approved by the Association's Testing Laboratories must now be supplied with "means to prevent excessive water pressures and temperatures." Such means must "be an integral part of every storage water heater," although, by a December 12, 1935, ruling of the Subcommittee on Approval Requirements for Gas Water Heaters, it need not be actually attached to the heater by the manufacturer so long as it is shipped in the same crate with the heater and is accompanied by proper instructions for installation.

In 1933 the requirement specifying protective devices for limiting stored water temperatures and pressures was suggested by the subcommittee for incorporation in the approval standards for gas water heaters and was printed with other proposed revisions in January, 1934, for criticism and comment by the industry. Shortly thereafter it was reconsidered in the light of the industry's reaction, reaffirmed and approved by the Association's Approval Requirements Committee (A. S. A. Sectional Committee, Project Z21), as a part of the American Standard Approval Requirements for Gas Water Heaters which went into effect January 1, 1936.

However, at its January, 1935, meeting, the water heater committee felt the matter to be of such importance that it set July 1, 1935, as the effective date for the relief device clause in question and ruled that it be made retroactive to all storage water heaters irrespective of the date of approval. Subsequently, however, the committees decided that additional time should be allowed for manufacturers to secure relief valves or develop their own and equip appliances therewith, and the effective date of the ruling was moved forward six months to January 1, 1936. All water heater manufacturers were notified of this action early in March, 1935, and again in May. It is, consequently, necessary that all American Gas Association approved storage water heaters be fitted with relief valves or shut-off devices limiting both stored water pressure and temperature and capable of complying either with the American Standard Listing Requirements for Relief and Automatic Gas Shut-Off Valves for use on Water Heating Systems, Z21.22-1935, or with special stipulations set forth in the American Standard Approval Requirements for Gas Water Heaters, Z21.10-1935. If a manufacturer wishes to use tested and listed relief or shut-off valves on approved heaters he should first contact the Testing Laboratories to secure permission to do so.

Inasmuch as approximately 30 models of relief valves of different capacities manufactured by seven companies already appear listed as certified in the American Gas Association Directory of Approved Gas Appliances and Listed Accessories, the procurement of satisfactory relief or shut-off units by water heater manufacturers should not be difficult.

It is recommended that manufacturers contact either the main Laboratory in Cleveland or the Branch Laboratory in Los Angeles regarding the renewal or extension of approval on heaters to which relief devices have been attached as a result of the previously mentioned ruling.

Flexible Gas Tubing Standards Revised

FIVE proposed revisions to the American Standard Approval Requirements for Flexible Gas Tubing Z21.2-1932, have been finally approved by the American Gas Association Approval Requirements Committee, A. S. A. Sectional Committee, Project Z21, to become effective immediately.

Essentially the changes made limit any reductions of internal diameter of tubing caused by cutting, forbid the appearance of cement or other foreign material in gas ways or on end connections, and eliminate the minimum capacity heretofore required of all flexible gas tubing. Capacity tests will, of course, continue to be applied and the results be recorded. It is believed that the measurable capacity is generally limited by either internal tubing obstructions or hose end nozzles which matters are both currently covered by suitable size or performance requirements, and that the service capacity is largely contingent upon the length of tubing used which factor cannot well be regulated. Satisfactory past performance records of many models of flexible gas tubing seem to justify the revisions made.

Inasmuch as most of the flexible gas tubing listed in the American Gas Association Directory of Approved Gas Appliance and Listed Accessories was tested and certified prior to January 1, 1931, many samples will have to be resubmitted for test this year in accordance with the Association's "five-year" policy, if approval is to be continued. Such testing will be conducted in accordance with the new revised standards.

BONUS PLAN FOR METER READERS

(Continued from page 69)

one for books rated 98 to 109 inclusive, and one for books rated 110 and over. At least 95% of the meter books in a community that has been rerouted according to this plan should fall in the second group. The first and fourth groups are provided primarily for use in cities that have not been rerouted. Following is an example of a bonus computation:

Meter book rating	96
Meter in book	507
Meters inactive, not read	8
Active meters	499
Meters skipped	6
Meters read	493
Percentage read	98.8
Reading bonus	$1.12

The bonus is calculated on a daily basis, so that a meter reader's good performance on certain days is not penalized by adverse conditions encountered on other days. Additional bonus is paid for reporting defective or lost meters, etc. Deductions are made as follows:

- 5¢ for each error in reading or subtraction,
- 5¢ for each failure to O.K. an abnormal consumption,
- 10¢ for each meter not read and not listed on pick-up sheet.

Table 3 shows the form used for the compilation of the meter readers' bonus, and illustrates a typical fifteen days' performance.

The plan has been well received by the majority of the meter readers, as it gives the ambitious ones an opportunity to make from $3 to $7 a week extra.

This plan is in use in cities of from 5,000 to over 500,000 population. It has resulted in real economy, as a reduction of about 7½% has been made in the number of meter books, and there has been a material decrease in the number of skipped meters. As a matter of fact, the plan has worked so well in several cities that all pick-up readers have been transferred to other work as there are not enough unread meters left to make it worth while to send a second reader back.

NATIONAL WATER HEATING CONTEST

(Continued from page 49)

sional chairmen who will keep the interest in this contest alive in their divisions and who will act as contact between headquarters and their various divisions so that the maximum of sales effort might be developed and kept active behind the gas water heating load which, because of its importance and value to utilities should be developed by every legitimate means possible. The cooperation and participation of every gas company is requested in support of this activity.

Bartlett Hayward Appoints New Officers

HOWARD BRUCE, chairman of the board of directors of The Bartlett Hayward Company, Baltimore, Md., has announced the following changes in officials:

Chester F. Hockley, who has been president of the company since 1931, has retired to become president of the newly re-organized Davison Chemical Corporation. He will continue as a director of The Bartlett Hayward Company. Walter F. Perkins, formerly vice-president and general manager, has been elected president. George E. Probest, Jr., formerly secretary and treasurer, has been elected vice-president and treasurer. Herman H. Vordemberge, formerly assistant secretary and assistant treasurer, has been elected secretary and assistant treasurer.

Mr. Perkins first became associated with The Bartlett Hayward Company in 1914. He filled various positions up to that of general superintendent, from which position he retired in 1927 to become manager of the Harrison Works of the Worthington Pump & Machinery Corporation. In 1932, he returned to Baltimore as vice-president and general manager of The Bartlett Hayward Company, which position he has held up to the present time.

C. T. Aaron Injured

CHARLES T. AARON, veteran of the gas industry and erstwhile executive in such organizations as the A-B Stove Company, the Round Oak Furnace Company and the Caloric Gas Stove Works, sustained serious injuries in an automobile accident on October 19, 1935, while en route from the American Gas Association convention in Chicago to New York City, and has since been confined at the Peoples Hospital, Akron, Ohio. Mr. Aaron has been in the gas industry for about 35 years and has held positions with The United Gas Improvement Company and at least 6 major appliance manufacturers.

Many of Mr. Aaron's friends who have heard of his condition have either called to see him or sent messages of encouragement and cheer. His condition continues to remain critical and he will undoubtedly be confined to the hospital for some time. He is in room 208, Peoples Hospital, Akron, Ohio, and would welcome visits or mail from friends in the utility and appliance industries.

J. A. Dixon Dies

JOHN ALFRED DIXON, president of the Pintsch Compressing Company and vice-president of the Safety Car Heating and Lighting Company, New York, died January 13 after a short illness. He was sixty-two years old.

Mr. Dixon, who was a long-time member of the American Gas Association, was graduated from Stevens Institute of Technology in 1891. He was employed by the Safety Car Heating and Lighting Company immediately following his graduation and was engaged for several years in building Pintsch gas plants throughout the United States.

He was made vice-president and general manager of the Pintsch Compressing Company in 1909 and president in 1919. In addition to the American Gas Association, he was a member of the American Society of Mechanical Engineers, the Compressed Gas Association, and a number of social and civic clubs.

W. J. McGurty Dies

WILLIAM J. McGURTY, Pittsburgh representative of The Bartlett Hayward Company, Baltimore, died recently after 21 years of service with the company. He was 54 years of age.

Mr. McGurty was educated at Columbia University and was first employed by the Consolidated Gas Company of New York in 1904. He joined the technical staff of The Bartlett Hayward Company in 1914, where his activities covered a broad field in industrial engineering. During the latter period of his career, his activities were in connection with blast furnaces and coke plants. He was widely respected in the industry.

Personnel Service

SERVICES OFFERED

Accounting, Cost and General. Eight years' experience; gas plant, transmission and distribution system construction and operations analyzed. Ascertainment of cost, accounting of same determined in conformity with utility and public service commissions requirements. Field records gas works and main systems audited and accounting and statistical reports compiled. **983.**

Assistant Superintendent of coal gas plant desires position with a coke oven or coal gas plant in supervisory capacity. Three and one-half years university training in civil engineering; eight and one-half years' experience in coal gas plant. Familiar with plant construction work. (29) Married. **984.**

Presently employed. Available thirty days. Do you need a gas man who can get results? I am willing to prove it by a year's trial. Experienced thirteen years in gas business **sales promotion,** making friends, boosting sales, creating company good will; can help sales force get new business. **985.**

Manager. 20 years' experience managing water gas properties. 5 years' experience managing natural gas property. Experience includes all phases including distribution, new business and public relations. **986.**

Manager or **Superintendent.** Twenty years' practical experience handling properties having up to 4,000 meters. Water or coal gas plants. Have had good success in rebuilding run down properties. Would take living wage and share of profits, married (50). **987.**

Engineer experienced in following: Operation —coal and water gas plants—distribution and service department. Design—several water gas plants with equipment—coal gas condensing and purification equipment—high and low distribution systems. Construction —complete water and coal gas plants—remodeling plants; distribution. **988.**

Research Chemist—Several years' experience in a coke plant together with research and development work for a leading research corporation. Familiar with analyses of by-products and routine analytical methods. Now employed but desire a change. **990.**

Gas Engineer desires new connection. Graduate chemical engineer. Fifteen years' experience in design, construction, operation and maintenance of Water Gas Plants and high-, medium- and low-pressure distribution systems. Able assistant or manager. **992.**

Gas range and Appliance **salesman** seeking substantial connection. Thoroughly experienced and capable of handling any territory. Have the ability to supervise and perform sales promotion duties. Will locate anywhere, no preference as to territory. Interested in salary and expenses or drawing account, commission and expenses. **993.**

Gas Engineer. Ten years operating all types of plants, various capacities from cadet to superintendent. Six years, gas manufacturing equipment company, last three chief engineer. Three years with public servic commission, valuation engineer. Experience ideal for holding or operating company engineer. **994.**

Sales Manager—Sales Promotion Manager—Salesman—competent, aggressive, experienced,—for gas company or manufacturer wanting successful sales. Appliances, gas merchandise, gas distribution supplies, plumbing, heating specialities. 12 years' effective selling, promoting, advertising, managing volume sales for leading specialty manufacturers. National gas company executive, jobber and consumer contacts. **995.**

Industrial Sales Engineer:—Several years' experience in supervising the sales, installations and maintenance of house heating, industrial steam and water heating. Special training and knowledge derived from long experience with eastern utility companies will be a great asset to any corporation. **997.**

Gas minded, practice trained water gas plant man (39). Experience ranged from sole operator 4-foot plant to assistant **superintendent** of a 3½ million daily plant. Also experienced as general foreman of distribution construction, mains and services. **999.**

Energetic efficiency gas man with twenty years' experience, operating and managing, desires change from present position, to that of **manager** or **superintendent** of medium sized utility or assistant to manager of large one. Knowledge of sales problems. Single, college, go anywhere. (39). **1000.**

SERVICES OFFERED

Gas Technologist—Young man (34) with broad experience in gas industry as manufacturing and distribution engineer, operator and designer of equipment, desires responsible position where valuable engineering and business experience can be put to use. **1001.**

Sales Engineer, thoroughly experienced in new business operations of gas utility, domestic appliances, house heating and industrial application, wants position where there is chance for advancement. **1002.**

Engineer (27) B. S. Chemical Engineering 1932; 1-year graduate study. Experience: 18 months automotive industry; 3 months gas pipeline; 22 months gas appliance industry where now employed. **1003.**

Sales **Supervisor** or Sales **Engineer.** Have had considerable experience in industrial, commercial, house heating and domestic sales work. Also am familiar with design and installation of equipment. Have worked with manufactured and natural gases. **1004.**

Kitchen **Equipment Salesman.** Desires connection with well-established hotel and restaurant kitchen equipment house. Twenty-five years' experience designing and selling kitchen equipment in and around New York City, through architects and builders. Thoroughly familiar with all gas appliances for heavy duty work in kitchens. **1005.**

Thoroughly seasoned and competent **sales manager** able to handle any or all divisions of commercial and public relations departments. Several outstanding records in water heating, commercial and industrial work. Can get volume business in any territory and produce satisfying results. **1006.**

Auditor: Age 30, University graduate in 1927, accounting major. Three years' public accounting on public utility staff, three years with large holding corporation, supervising property accounting for thirty-two gas properties. Assistant general auditor. **1007.**

Engineer with utility accounting experience. B. S., M. E. E.; postgraduate work. Three years' research assistant, National Industrial Conference Board. Twelve years' gas and electric utility experience, rates, franchises, cost allocations, contracts, research in utility management problems. Experience with P. S. C. accounting. (N. Y.). **1008.**

Practical and technical **gas engineer**—thirteen years' experience design, layout, development, estimating, advertising, selling and appraisal of gas plants and equipment. Also competent structural design. **1010.**

Graduate Engineer with twelve years' experience in the gas business; assistant superintendent of large water gas plant, estimating costs for construction and alteration of coke and gas plants, physical inventories and appraisals, desires position in operating or construction department, married, (35). **1011.**

Practical, technically trained man seeks opportunity in industrial **gas burner** and **appliance** field with manufacturer or utility. Experience includes making, testing, developing industrial burners and appliances; traveled several years supervising installations. Likes to travel, will go anywhere. Last five years industrial salesman. **1013.**

Semi-Senior **Accountant** for three years—public utility staff—accounting firm, then three years as special accountant with large electric and gas corporation until they went into receivership. Auditor of disbursements for large corporation board, thorough experience in all departments. (30). **1014.**

Engineer—Broad experience. Three years in valuation:—appraisals, reports, and property records. Three years in heating and ventilating:—research, design and installation. Supervision of coal and water gas production and distribution. Design, construction, estimates, expert operation and research. Graduate; advanced engineering degree. **1015.**

Utility Executive available: have had 25 years' experience in all branches of utility business, organization, financing, construction, operation and utilization. Recently vice-president in charge of sales of large holding company, selling gas, electricity, water, ice, fuel, merchandise and securities through local operating companies. **1016.**

SERVICES OFFERED

Experienced **Sales Engineer** (ME) having broad background of gas and other industries; have designed, purchased, operated and sold plant equipment. Essentially practical yet have vision, iniative and creative ability; specialist in gas measurement on which much original work accomplished. **1017.**

Engineer, Graduate M. E. 20 years' experience in electric utility, manufactured and natural gas, appraisal valuations, previously manager, general superintendent and engineer for operating company, temporarily employed. **1018.**

Insurance Specialist: graduate engineer, experienced utilities, operating and holding company, meter reader to junior executive; now employed, specialized last five years in producing large economies in insurance protection of all kinds for utility companies. Available special reports or full time. **1019.**

Fifteen years, practically all spent in the design, construction, and **appraisal** of manufactured gas plants and distribution systems have suitably fitted an engineering graduate for twenty or more additional years of conscientious, competent service to the employer who can offer a future. Available now. **1020.**

Geologist, valuation engineer—University education; many years' experience with largest producer in Appalachian fields, know producing sands, depths, rock pressures, depletion. Also valuation expert on mechanical equipment inventory for gas plants. Statistician and chart experience. (38). **1021.**

Gas Engineer, now employed, desires position as manager, industrial gas engineer, or distribution engineer. Ten years' experience in all branches of the manufactured gas business, including three years as industrial gas sales engineer; some experience with natural gas. Graduate (ME); (31). **1022.**

Utilization—testing—**sales**—**installation**—of gas appliances. Long experience in house heating, water heating, hotel and restaurant, industrial work. In metropolitan New York and vicinity. Will go with a utility or represent a manufacturer. **1023.**

Engineer-Accountant graduate engineer, sixteen years' experience preparing, presenting valuations and original cost analyses of tangible and intangible property (electric, manufactured and natural gas) for reorganization, sale, recapitalization, insurance, franchise, rates and commissioner's review. Prepared rate studies and presented rate schedules. Set up fixed capital records and perpetual inventory systems. **1024.**

Gas Analyst—Seven years' experience in research and gas industry. Thoroughly qualified in every phase and mode of gas analyses, including Podbielniak fractionation. Now in charge of gas laboratory. **1025.**

Salesman with engineering degree, successful past five years in promotion and sale of house heating equipment in New York Metropolitan area. Experience includes public relations, speaking before large groups of trained men, and servicing. Capable as supervisor or manufacturer's representative. Any location. (29) Married. **1026.**

Auditor—Office Manager. Former office manager of 50,000 account gas company desires opening anywhere. Experience covers fifteen years on all utility clerical and accounting functions. At present temporarily employed utility auditing by well-known public accounting firm. (32) Married. **1027.**

POSITIONS OPEN

District Manager, 30 to 40, well educated, with thorough knowledge fundamentals of salesmanship and ability to advance. Must know selection, training and supervision sales personnel, maintenance good customer and dealer relations and have had promotional sales experience. Previous retail sales work with gas appliances essential. **0300.**

Fairly large gas utility requires an experienced gas sales promotion man, as **architects' and builders' service** representative, in a rapidly developing city in New England. Ability to sell to owners and builders, house heating as well as the domestic range and water heating load important. **0301.**

An aggressive gas **sales** promotion representative to handle **dealer contact,** is required immediately for a medium sized gas company. Must be also capable of handling details of advertising and publicity. **0302.**

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